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1999 CTS AMENDMENTS to the Information Processing Guide to Standards and Implementation

Summary of Curriculum Changes

Prerequisite changes:

- INF1010: Computer Operations
- INF1040: Graphics Tools
- INF1090: Information Highway

Section A

- **Remove** pages A.1 to A.8 (1997) and **replace** with new pages A.1 to A.8 (1999).

Section B

- **Remove** pages B.5 to B.8 (1997) and **replace** with new pages B.5 to B.8 (1999).

Section C

- **Remove** pages C.1 to C.4 (1997) and **replace** with new pages C.1 to C.4 (1999).

Section D

- **Remove** pages D.3–6, D.7–8, D.11–12, D.15–18, D.19–20, D.25–26, D.31–32, D.35–36 and D.41–44 (1997) and **replace** with new pages D.3–6, D.7–8, D.11–12, D.15–18, D.19–20, D.25–26, D.31–32, D.35–36 and D.41–44 (1999).

Section E

- **Remove** pages E.3–4, E.21–22, E.49–50, E.57–58, E.87–88 and E.93–94 (1997) and **replace** with new pages E.3–4, E.21–22, E.49–50, E.57–58, E.87–88 and E.93–94 (1999).

Section F

- **Remove** pages F.3–4, F.7–8, F.35–36, F.63–64, F.75–76 and F.83–84 (1997) and **replace** with new pages F.3–4, F.7–8, F.35–36, F.63–64, F.75–76 and F.83–84 (1999).

Section H

- **Remove** pages H.5 to H.8 (1997) and **replace** with new pages H.5 to H.8 (1999).

Section I

- **Remove** pages I.1 to I.44 (1997) and **replace** with new pages I.1 to I.8 (1999).

Section J

- **Remove** pages J.11–12 and J.21–22 (1997) and **replace** with new pages J.11–12 and J.21–22 (1999).

CAREER AND TECHNOLOGY STUDIES

A. PROGRAM RATIONALE AND PHILOSOPHY

Through Career and Technology Studies (CTS), secondary education in Alberta is responding to the many challenges of modern society, helping young people develop daily living skills and nurturing a flexible, well-qualified work force.

In Canada's information society, characterized by rapid change in the social and economic environment, students must be confident in their ability to respond to change and successfully meet the challenges they face in their own personal and work lives. In particular, they make decisions about what they will do when they finish high school. Many students will enter the work force, others will continue their education. All students face the challenges of growing independence and responsibility, and of entering post-secondary programs and/or the highly competitive workplace.

Secondary schools also face challenges. They must deliver, on a consistent basis, high quality, cost-effective programs that students, parents and the community find credible and relevant.

CTS helps schools and students meet these challenges. Schools can respond more efficiently and effectively to student and community needs and expectations by taking advantage of the opportunities in the CTS curriculum to design courses and access school, community and distance learning resources. Students can develop the confidence they need as they move into adult roles by assuming increased responsibility for their

learning; cultivating their individual talents, interests and abilities; and by defining and acting on their goals.

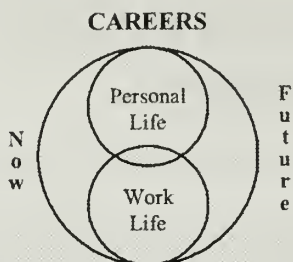
As an important component of education in Alberta secondary schools, CTS promotes student achievement by setting clear expectations and recognizing student success. Students in CTS develop competencies—the knowledge, skills and attitudes they are expected to demonstrate, that is, what they know and what they are able to do.

Acquired competencies can be applied now and in the future as students make a smooth transition into adult roles in the family, community, workplace and/or further education. To facilitate this transition, clearly stated expectations and standards have been defined in cooperation with teachers, business and industry representatives and post-secondary educators.

CTS offers all students important learning opportunities. Regardless of the particular area of study chosen, *students in CTS will:*

- develop skills that can be applied in their daily lives, now and in the future
- refine career-planning skills
- develop technology-related skills
- enhance employability skills
- apply and reinforce learnings developed in other subject areas.

In CTS, students build skills they can apply in their everyday lives. For example, in the CTS program, particularly at the introductory levels, students have the opportunity to improve their ability to make sound consumer decisions and to appreciate environmental and safety precautions.

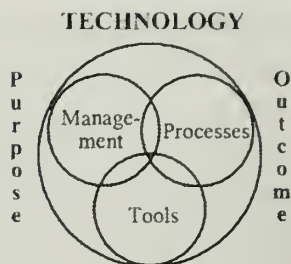


A career encompasses more than activities just related to a person's job or occupation; it involves one's personal life in both local and global contexts; e.g., as a family member, a friend, a community volunteer, a citizen of the world.

The integration of careers throughout the CTS program helps students to make effective career decisions and to target their efforts. CTS students will have the opportunity to expand their knowledge about careers, occupations and job opportunities, as well as the education and/or training requirements involved. Also, students come to recognize the need for lifelong learning.

Students in CTS have the opportunity to use and apply technology and systems effectively and efficiently. This involves:

- a decision regarding which processes and procedures best suit the task at hand
- the appropriate selection and skilled use of the tools and/or resources available
- an assessment of and management of the impact the use of the technology may have on themselves, on others and on the environment.



Integrated throughout CTS are employability skills, those basic competencies that help students develop their personal management and social skills. Personal management skills are improved as students take increased responsibility for their learning, design innovative solutions to problems and challenges, and manage resources effectively and efficiently. Social skills improve through learning experiences that require students to work effectively with others, demonstrate teamwork and leadership, and maintain high standards in safety and accountability.

As well as honing employability skills, CTS reinforces and enhances learnings developed in core and other optional courses. The curriculum emphasizes, as appropriate, the effective application of communication and numeracy skills.

In addition to the common outcomes described above, students focusing on a particular area of study will develop career-specific competencies that support entry into the workplace and/or related post-secondary programs. Career-specific competencies can involve understanding and applying appropriate terminology, processes and technologies related to a specific career, occupation or job.

PROGRAM OUTCOMES

The program outcomes describe the basic competencies integrated throughout the CTS program.

Within an applied context relevant to personal goals, aptitudes and abilities; *the student in CTS will:*

- demonstrate the basic knowledge, skills and attitudes necessary for achievement and fulfillment in personal life
- develop an action plan that relates personal interests, abilities and aptitudes to career opportunities and requirements
- use technology effectively to link and apply appropriate tools, management and processes to produce a desired outcome
- develop basic competencies (employability skills), by:
 - selecting relevant, goal-related activities, ranking them in order of importance, allocating necessary time, and preparing and following schedules (managing learning)
 - linking theory and practice, using resources, tools, technology and processes responsibly and efficiently (managing resources)
 - applying effective and innovative decision-making and problem-solving strategies in the design, production, marketing and consumption of goods and services (problem solving and innovation)
 - demonstrating appropriate written and verbal skills, such as composition, summarization and presentation (communicating effectively)
 - participating as a team member by working cooperatively with others and contributing to the group with ideas, suggestions and effort (working with others)

- maintaining high standards of ethics, diligence, attendance and punctuality, following safe procedures consistently, and recognizing and eliminating potential hazards (demonstrating responsibility).

PROGRAM ORGANIZATION

CURRICULUM STRUCTURE

Career and Technology Studies is organized into **strands** and **courses**.

Strands in CTS define competencies that help students:

- build daily living skills
- investigate career options
- use technology (managing, processes, tools) effectively and efficiently
- prepare for entry into the workplace and/or related post-secondary programs.

In general, strands relate to selected industry sectors offering positive occupational opportunities for students. Some occupational opportunities require further education after high school, and some allow direct entry into the workplace. Industry sectors encompass goods-producing industries, such as agriculture, manufacturing and construction; and service-producing industries, such as business, health, finance and insurance.

Courses are the building blocks for each strand. They define what a student is expected to know and be able to do (exit-level *competencies*). Courses also specify prerequisites. Recommendations for course parameters, such as instructional qualifications, facilities and equipment can be found in the guides to implementation.

The competencies a student must demonstrate to achieve success in a course are defined through *general outcomes*. Senior high school students who can demonstrate the general outcomes defined for a CTS course; i.e., who have the designated competencies, will qualify for 1 credit toward their high school diploma.

Specific outcomes provide a more detailed framework for instruction. Within the context of the general outcomes, the specific outcomes further define the knowledge, skills and attitudes the student should acquire.

The following chart shows the 22 strands that comprise the CTS program and the number of 1-credit courses available in each strand.

Strand	No. of Courses
1. Agriculture	33
2. Career Transitions	31
3. Communication Technology	33
4. Community Health	31
5. Construction Technologies	46
6. Cosmetology Studies	58
7. Design Studies	31
8. Electro-Technologies	37
9. Energy and Mines	26
10. Enterprise and Innovation	8
11. Fabrication Studies	41
12. Fashion Studies	29
13. Financial Management	14
14. Foods	37
15. Forestry	21
16. Information Processing	48
17. Legal Studies	13
18. Logistics	12
19. Management and Marketing	20
20. Mechanics	54
21. Tourism Studies	24
22. Wildlife	17

LEVELS OF ACHIEVEMENT

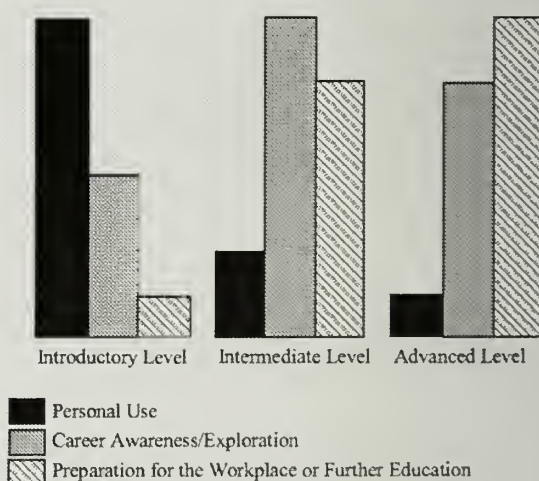
Courses are organized into three levels of achievement: **introductory**, **intermediate** and **advanced**. As students progress through the levels, they will be expected to meet higher standards and demonstrate an increased degree of competence, in both the program outcomes and the general outcomes defined for individual courses.

Introductory level courses help students build daily living skills and form the basis for further learning. Introductory courses are for students who have no previous experience in the strand.

Intermediate level courses build on the competencies developed at the introductory level. They provide a broader perspective, helping students recognize the wide range of related career opportunities available within the strand.

Advanced level courses refine expertise and help prepare students for entry into the workplace or a related post-secondary program.

The graph below illustrates the relative emphasis on the aspects of career planning at each of the levels.



CURRICULUM AND ASSESSMENT STANDARDS

Curriculum standards in CTS define what students must know and be able to do. Curriculum standards are expressed through the program outcomes for CTS, and through general and specific outcomes defined for individual courses within each strand.

Assessment standards define how student performance is to be judged. In CTS, each assessment standard defines the conditions and criteria to be used for assessing the competencies associated with each general outcome. To receive credit for a course, students must demonstrate competency at the level specified by the conditions and criteria defined for each general outcome.

Students throughout the province receive a fair and reliable assessment as they use the standards to guide their efforts, thus ensuring they participate more effectively and successfully in the learning and assessment process. Standards at advanced levels are, as much as possible, linked to workplace and post-secondary entry-level requirements.

TYPES OF COMPETENCIES

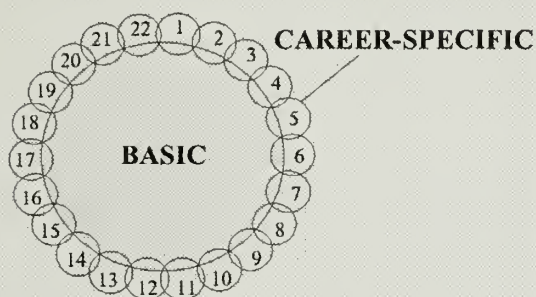
Two types of competencies are defined within the CTS program: basic and career-specific.

Basic competencies are generic to any career area and are developed within each course. Basic competencies include:

- personal management; e.g., managing learning, being innovative, ethics, managing resources
- social; e.g., communication, teamwork, leadership and service, demonstrating responsibility (safety and accountability).

Career-specific competencies relate to a particular strand. These competencies build daily living skills at the introductory levels and support the smooth transition to the workplace and/or post-secondary programs at the intermediate and advanced levels.

The model below shows the relationship of the two types of competencies within the 22 strands of the CTS program.




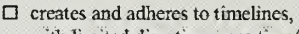
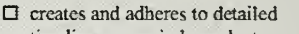
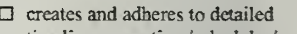
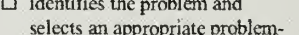
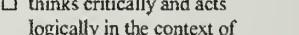
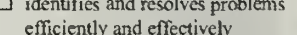


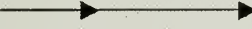





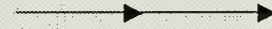

BASIC COMPETENCIES REFERENCE GUIDE

The chart below outlines basic competencies that students endeavour to develop and enhance in each of the CTS strands and courses. Students' basic competencies should be assessed through observations involving the student, teacher(s), peers and others as they complete the requirements for each course. In general, there is a progression of task complexity and student initiative as outlined in the Developmental Framework*. As students progress through Stages 1, 2, 3 and 4 of this reference guide, they build on the competencies gained in earlier stages. Students leaving high school should set themselves a goal of being able to demonstrate Stage 3 performance.

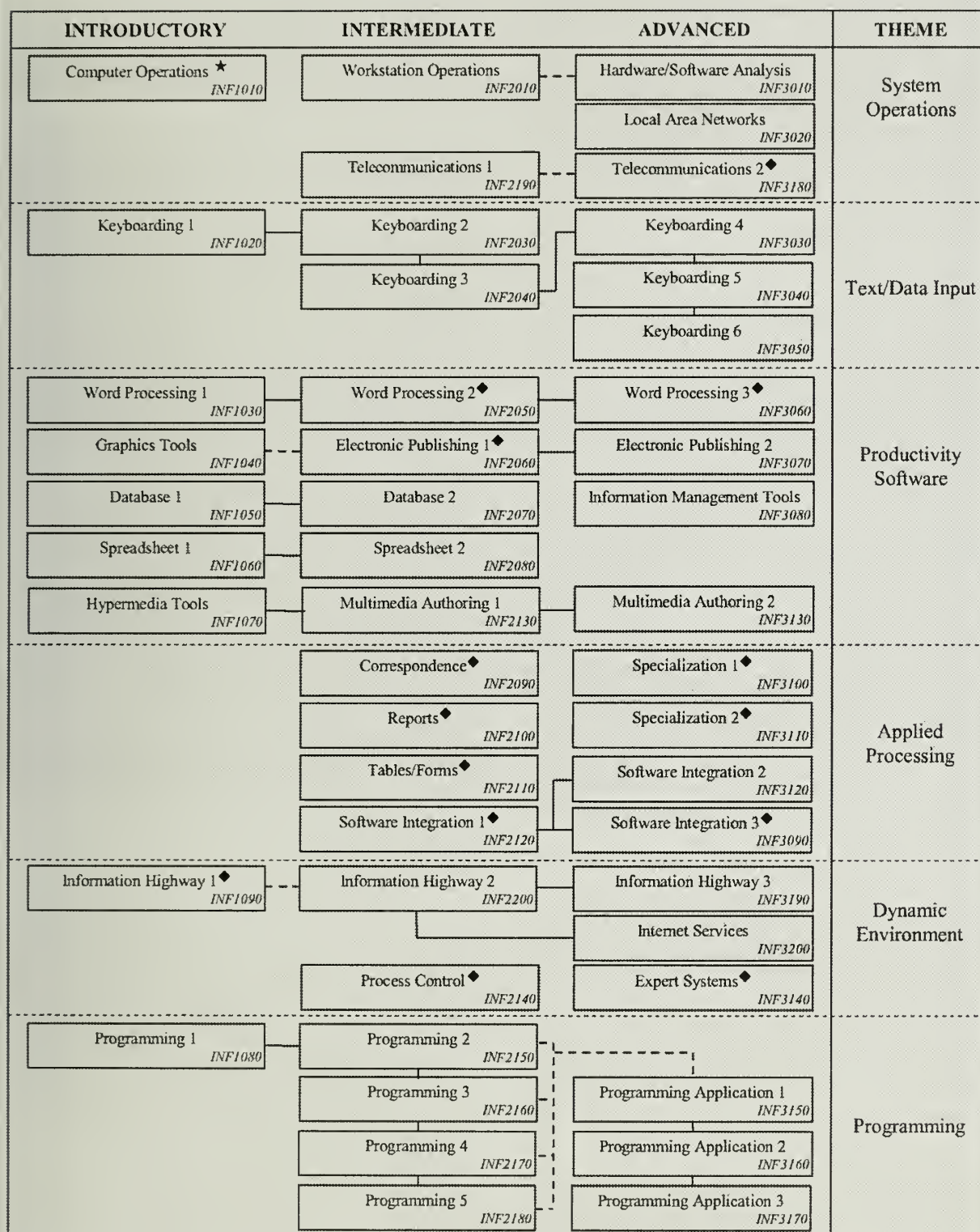
Suggested strategies for classroom use include:

- having students rate themselves and each other
- using in reflective conversation between teacher and student
- highlighting areas of strength
- tracking growth in various CTS strands
- highlighting areas upon which to focus
- maintaining a student portfolio.

Stage 1— The student:	Stage 2— The student:	Stage 3— The student:	Stage 4— The student:
Managing Learning <ul style="list-style-type: none"> <input type="checkbox"/> comes to class prepared for learning <input type="checkbox"/> follows basic instructions, as directed <input type="checkbox"/> acquires specialized knowledge, skills and attitudes <input type="checkbox"/> identifies criteria for evaluating choices and making decisions <input type="checkbox"/> uses a variety of learning strategies 	 <ul style="list-style-type: none"> <input type="checkbox"/> follows instructions, with limited direction <input type="checkbox"/> sets goals and establishes steps to achieve them, with direction <input type="checkbox"/> applies specialized knowledge, skills and attitudes in practical situations <input type="checkbox"/> identifies and applies a range of effective strategies for solving problems and making decisions <input type="checkbox"/> explores and uses a variety of learning strategies, with limited direction 	 <ul style="list-style-type: none"> <input type="checkbox"/> follows detailed instructions on an independent basis <input type="checkbox"/> sets clear goals and establishes steps to achieve them <input type="checkbox"/> transfers and applies specialized knowledge, skills and attitudes in a variety of situations <input type="checkbox"/> uses a range of critical thinking skills to evaluate situations, solve problems and make decisions <input type="checkbox"/> selects and uses effective learning strategies <input type="checkbox"/> cooperates with others in the effective use of learning strategies 	 <ul style="list-style-type: none"> <input type="checkbox"/> demonstrates self-direction in learning, goal setting and goal achievement <input type="checkbox"/> transfers and applies learning in new situations; demonstrates commitment to lifelong learning <input type="checkbox"/> thinks critically and acts logically to evaluate situations, solve problems and make decisions <input type="checkbox"/> provides leadership in the effective use of learning strategies
Managing Resources <ul style="list-style-type: none"> <input type="checkbox"/> adheres to established timelines; uses time/schedules/planners effectively <input type="checkbox"/> uses information (material and human resources), as directed <input type="checkbox"/> uses technology (facilities, equipment, supplies), as directed, to perform a task or provide a service <input type="checkbox"/> maintains, stores and/or disposes of equipment and materials, as directed 	 <ul style="list-style-type: none"> <input type="checkbox"/> creates and adheres to timelines, with limited direction; uses time/schedules/planners effectively <input type="checkbox"/> accesses and uses a range of relevant information (material and human resources), with limited direction <input type="checkbox"/> uses technology (facilities, equipment, supplies), as appropriate, to perform a task or provide a service, with minimal assistance and supervision <input type="checkbox"/> maintains, stores and/or disposes of equipment and materials, with limited assistance 	 <ul style="list-style-type: none"> <input type="checkbox"/> creates and adheres to detailed timelines on an independent basis; prioritizes task; uses time/schedules/planners effectively <input type="checkbox"/> accesses a range of information (material and human resources), and recognizes when additional resources are required <input type="checkbox"/> selects and uses appropriate technology (facilities, equipment, supplies) to perform a task or provide a service on an independent basis <input type="checkbox"/> maintains, stores and/or disposes of equipment and materials on an independent basis 	 <ul style="list-style-type: none"> <input type="checkbox"/> creates and adheres to detailed timelines; uses time/schedules/planners effectively; prioritizes tasks on a consistent basis <input type="checkbox"/> uses a wide range of information (material and human resources) in order to support and enhance the basic requirement <input type="checkbox"/> recognizes the monetary and intrinsic value of managing technology (facilities, equipment, supplies) <input type="checkbox"/> demonstrates effective techniques for managing facilities, equipment and supplies
Problem Solving and Innovation <ul style="list-style-type: none"> <input type="checkbox"/> participates in problem solving as a process <input type="checkbox"/> learns a range of problem-solving skills and approaches <input type="checkbox"/> practices problem-solving skills by responding appropriately to a clearly defined problem, specified goals and constraints, by: <ul style="list-style-type: none"> — generating alternatives — evaluating alternatives — selecting appropriate alternative(s) — taking action 	 <ul style="list-style-type: none"> <input type="checkbox"/> identifies the problem and selects an appropriate problem-solving approach, responding appropriately to specified goals and constraints <input type="checkbox"/> applies problem-solving skills to a directed or a self-directed activity, by: <ul style="list-style-type: none"> — generating alternatives — evaluating alternatives — selecting appropriate alternative(s) — taking action 	 <ul style="list-style-type: none"> <input type="checkbox"/> thinks critically and acts logically in the context of problem solving <input type="checkbox"/> transfers problem-solving skills to real-life situations, by generating new possibilities <input type="checkbox"/> prepares implementation plans <input type="checkbox"/> recognizes risks 	 <ul style="list-style-type: none"> <input type="checkbox"/> identifies and resolves problems efficiently and effectively <input type="checkbox"/> identifies and suggests new ideas to get the job done creatively, by: <ul style="list-style-type: none"> — combining ideas or information in new ways — making connections among seemingly unrelated ideas — seeking out opportunities in an active manner

Stage 1— The student:	Stage 2— The student:	Stage 3— The student:	Stage 4— The student:
Communicating Effectively <ul style="list-style-type: none"> <input type="checkbox"/> uses communication skills; e.g., reading, writing, illustrating, speaking <input type="checkbox"/> uses language in appropriate context <input type="checkbox"/> listens to understand and learn <input type="checkbox"/> demonstrates positive interpersonal skills in selected contexts 	<ul style="list-style-type: none"> <input type="checkbox"/> communicates thoughts, feelings and ideas to justify or challenge a position, using written, oral and/or visual means <input type="checkbox"/> uses technical language appropriately <input type="checkbox"/> listens and responds to understand and learn <input type="checkbox"/> demonstrates positive interpersonal skills in many contexts 	<ul style="list-style-type: none"> <input type="checkbox"/> prepares and effectively presents accurate, concise, written, visual and/or oral reports providing reasoned arguments <input type="checkbox"/> encourages, persuades, convinces or otherwise motivates individuals <input type="checkbox"/> listens and responds to understand, learn and teach <input type="checkbox"/> demonstrates positive interpersonal skills in most contexts 	<ul style="list-style-type: none"> <input type="checkbox"/> negotiates effectively, by working toward an agreement that may involve exchanging specific resources or resolving divergent interests <input type="checkbox"/> negotiates and works toward a consensus <input type="checkbox"/> listens and responds to understand, learn, teach and evaluate <input type="checkbox"/> promotes positive interpersonal skills among others
Working with Others <ul style="list-style-type: none"> <input type="checkbox"/> fulfills responsibility in a group project <input type="checkbox"/> works collaboratively in structured situations with peer members <input type="checkbox"/> acknowledges the opinions and contributions of others in the group 	<ul style="list-style-type: none"> <input type="checkbox"/>  <input type="checkbox"/> cooperates to achieve group results <input type="checkbox"/> maintains a balance between speaking, listening and responding in group discussions <input type="checkbox"/> respects the feelings and views of others 	<ul style="list-style-type: none"> <input type="checkbox"/> seeks a team approach, as appropriate, based on group needs and benefits; e.g., idea potential, variety of strengths, sharing of workload <input type="checkbox"/> works in a team or group: <ul style="list-style-type: none"> — encourages and supports team members — helps others in a positive manner — provides leadership/ followership as required — negotiates and works toward consensus as required 	<ul style="list-style-type: none"> <input type="checkbox"/> leads, where appropriate, mobilizing the group for high performance <input type="checkbox"/> understands and works within the context of the group <input type="checkbox"/> prepares, validates and implements plans that reveal new possibilities
Demonstrating Responsibility <p>Attendance</p> <ul style="list-style-type: none"> <input type="checkbox"/> demonstrates responsibility in attendance, punctuality and task completion <p>Safety</p> <ul style="list-style-type: none"> <input type="checkbox"/> follows personal and environmental health and safety procedures <input type="checkbox"/> identifies immediate hazards and their impact on self, others and the environment <input type="checkbox"/> follows appropriate/emergency response procedures <p>Ethics</p> <ul style="list-style-type: none"> <input type="checkbox"/> makes personal judgements about whether or not certain behaviours/actions are right or wrong 	<ul style="list-style-type: none"> <input type="checkbox"/>  <input type="checkbox"/> recognizes and follows personal and environmental health and safety procedures <input type="checkbox"/> identifies immediate and potential hazards and their impact on self, others and the environment <input type="checkbox"/>  <input type="checkbox"/> assesses how personal judgements affect other peer members and/or family; e.g., home and school 	<ul style="list-style-type: none"> <input type="checkbox"/>  <input type="checkbox"/> establishes and follows personal and environmental health and safety procedures <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/> assesses the implications of personal/group actions within the broader community; e.g., workplace 	<ul style="list-style-type: none"> <input type="checkbox"/>  <input type="checkbox"/> transfers and applies personal and environmental health and safety procedures to a variety of environments and situations <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/> demonstrates accountability for actions taken to address immediate and potential hazards <input type="checkbox"/> analyzes the implications of personal/group actions within the global context <input type="checkbox"/> states and defends a personal code of ethics as required
★ Developmental Framework <ul style="list-style-type: none"> • Simple task • Structured environment • Directed learning 	<ul style="list-style-type: none"> • Task with limited variables • Less structured environment • Limited direction 	<ul style="list-style-type: none"> • Task with multiple variables • Flexible environment • Self-directed learning, seeking assistance as required 	<ul style="list-style-type: none"> • Complex task • Open environment • Self-directed/self-motivated

SCOPE AND SEQUENCE



— Prerequisite

--- Recommended sequence

★ Course provides a strong foundation for further learning in this strand.

♦ Refer to specific courses for additional prerequisites.

COURSE DESCRIPTIONS

Course INF1010: Computer Operations

Students develop personal use skills basic to all courses in the Information Processing strand in the following applications: file management, basic hardware and software operations, text entry and workstation routines.

Course INF1020: Keyboarding 1

Students develop accurate touch keystroking of text and data appropriate to personal use and the application of efficient workstation procedures.

Course INF1030: Word Processing 1

Students develop skill in using basic commands and functions in word processing software, including document editing, and the formatting and printing of reports, correspondence and tables suitable for personal use applications.

Course INF1040: Graphics Tools

Students learn the basic commands and functions of computer graphics software, including bitmapped graphics (paint program) and vector graphics (draw program). Students also develop basic skills in manipulating existing graphics, as well as in producing their own graphics.

Course INF1050: Database 1

Students are introduced to the basic commands and functions of database software, and demonstrate how this software can be used as a personal tool in data and information management.

Course INF1060: Spreadsheet 1

Students have an opportunity to use basic functions and commands in spreadsheet software for general data manipulation and personal record keeping.

Course INF1070: Hypermedia Tools

Students develop basic skills with tools used for computerized presentations involving text, data, graphics, sound and animation.

Course INF1080: Programming 1

Students are introduced to computer programming languages and a structured programming environment, and they construct algorithms and code instructions to solve identified problems.

Course INF1090: Information Highway 1

Students develop personal use Internet skills for accessing and communicating data and information, with particular emphasis on the world wide web and email.

Course INF2010: Workstation Operations

Students learn computer workstation operations, including computer architecture, peripherals, configurations, operating system environments and platforms, utility software, diagnostic and protection software, hard drive file updating and maintenance, support resource application and troubleshooting activities.

Course INF2030: Keyboarding 2

Students enhance their personal use keyboarding competencies by increasing the rate of accurate touch keystroking of the alphabetic, numeric and selected punctuation keys.

Course INF2040: Keyboarding 3

Students enhance their keyboarding competencies, by increasing the rate of accurate touch keystroking of alphabetic, numeric and all punctuation keys to support personal use and limited, entry-level, workplace opportunities.

Course INF2050: Word Processing 2

Students expand their skills in using word processing software commands and functions to produce mailable reports and correspondence, including letters, memorandums and tables, all from rough draft copy.

Course INF2060: Electronic Publishing 1

Students develop skill, using electronic/desktop publishing software to create a variety of camera-ready documents.

Course INF2070: Database 2

Students use all the commands and functions of electronic database software that support effective and efficient database applications.

Course INF2080: Spreadsheet 2

Students demonstrate advanced level spreadsheet commands and functions to calculate and manipulate data and to prepare appropriate reports and printouts in text and graphic format.

Course INF2090: Correspondence

Students expand their rate of document production as they prepare various forms of correspondence in mailable form, using word processing software.

Course INF2100: Reports

Students expand their rate of production as they prepare various reports and manuscripts in mailable form.

Course INF2110: Tables/Forms

Students expand their rate of document production as they prepare various tables/forms in mailable form.

Course INF2120: Software Integration 1

Students develop document production skills requiring the integration of data, text and graphics.

Course INF2130: Multimedia Authoring 1

Students are introduced to multimedia software and provided with an opportunity to develop basic authoring competence, by accessing and integrating software resident text, video and audio clips.

Course INF2140: Process Control

Students develop skills in robotics/simulation software control by creating, modifying and using programs that incorporate computer-controlled movements and events in robotics/simulation activities and applications.

Course INF2150: Programming 2

Students increase their programming skills, by designing and generating programming code to handle decision making and repetitive processes.

Course INF2160: Programming 3

Students increase their programming skills, by using subprogram structures.

Course INF2170: Programming 4

Students increase their programming skills, by developing and using derived data types.

Course INF2180: Programming 5

Students increase their programming skills, by developing and using recursive, sorting and merging algorithms.

Course INF2190: Telecommunications 1

Students learn how to select and use various wired and wireless telecommunication systems. By using the Internet, they investigate how communication principles, bandwidth, telecommunication infrastructure and wave spectrum affects telecommunication systems.

Course INF2200: Information Highway 2

Students learn how to produce a web page for the Internet.

Course INF3010: Hardware/Software Analysis

Students analyze, compare and evaluate hardware/software based on user requirements.

Course INF3020: Local Area Networks

Students learn about local area network (LAN) computer systems, including hardware and peripheral configurations, interface protocols and data transmission characteristics.

Course INF3030: Keyboarding 4

Students develop their text and data keyboarding skills to entry-level occupational expectations.

Course INF3040: Keyboarding 5

Students increase their occupational-level keyboarding competence of text, data and function/service keys, using straight copy and edited material.

Course INF3050: Keyboarding 6

Students enhance their occupational-level keyboarding competence of all keystroke functions, using unedited, edited and straight copy material.

Course INF3060: Word Processing 3

Students develop occupational-level competence in the use of word processing software commands and functions to produce mailable reports, correspondence and tables, including the importing and merging of text, data and graphics.

Course INF3070: Electronic Publishing 2

Students use the functions and commands of electronic/desktop publishing software as they integrate text composing, editing, typesetting, graphics generation and page layout functions to create customized, professional, quality documents.

Course INF3080: Information Management Tools

Students develop competence in using information management systems software, such as project management, schedules and planners for either personal or workplace applications.

Course INF3090: Software Integration 3

Students develop high production rates as they process documents from unedited and unformatted copy, using numerous functions/commands to create, revise, format and print a wide range of mailable copy.

Course INF3100: Specialization 1

Students specialize in document preparation, terminology application and associated office routine expectations in a specific focus area, such as a medical, legal, petroleum, real estate, insurance, travel/tourism, forestry or agricultural environment.

Course INF3110: Specialization 2

Students develop workplace competence in a specific focus area, such as medical, legal, petroleum, real estate, insurance, travel/tourism, forestry or agricultural environment, by creating and completing appropriate documents that employ specialized communication skills and conform to workplace expectations and time constraints.

Course INF3120: Software Integration 2

Students expand their document production skills to workplace standards. Documents could require the importing and integration of word processing, spreadsheet, graphics and database files.

Course INF3130: Multimedia Authoring 2

Students learn to use a multimedia file or multimedia authoring software based on digitized input of text, video and audio clips.

Course INF3140: Expert Systems

Students acquire knowledge of expert systems, such as artificial intelligence and virtual reality. They gain competence, by developing or modifying programs that incorporate computer-controlled environments and multimedia interactive activities and applications.

Course INF3150: Programming Application 1

Students create programs that use external files.

Course INF3160: Programming Application 2

Students create a program, using a second programming language.

Course INF3170: Programming Application 3

Students enhance a program, using a second programming language.

Course INF3180: Telecommunications 2

Students demonstrate knowledge of telecommunication systems by designing a new system. They use the Internet in researching and developing their design and for comparing and contrasting various telecommunication initiatives. Students analyze the effect this is having on the individual and society.

Course INF3190: Information Highway 3

Students develop and maintain an Internet/intranet web site that makes use of advanced features.

Course INF3200: Internet Services

Students expand their skills from Information Highway 2, by learning how to operate, maintain and build an Internet/intranet site that may include computer bulletin boards, forums, electronic mail, Internet list servers, and/or moderated newsgroups. Proper use of hardware, software and liaison with users and clients is emphasized.

SECTION C: PLANNING FOR INSTRUCTION

CTS provides increased opportunity for junior and senior high schools to design courses based on the needs and interests of their students and the circumstances within the school and community. Some strands may be appropriately introduced at the junior high school level. Other strands are more appropriately introduced at the senior high school level or to Grade 9 students. Refer to this section for recommendations regarding the Legal Studies strand.

PLANNING FOR CTS

Defining Courses

Schools determine which strands and courses will be offered in a particular school, and will combine 1-credit CTS courses into multiple-credit CTS offerings.

Each 1-credit course was designed for approximately 25 hours of instruction. However, this time frame is only a guideline to facilitate planning. The CTS curricula are competency based, and the student may take more or less time to gain the designated competencies within each course.

A multiple-credit CTS offering will usually consist of 1-credit courses primarily from the same strand but, where appropriate, may include courses from other CTS strands. Refer to the *Guide to Education: ECS to Grade 12* (Appendix 1) for more information on course names and course codes.

Course selection and sequencing should consider:

- prerequisite(s)
- supporting course(s) (other CTS courses that may enhance the learning opportunity if offered with the course)
- course parameters
 - instructional qualifications, if specialized
 - equipment and facility requirements, if specialized.

The course parameters are defined in Sections D, E and F of this Guide.

Degree of Flexibility

The CTS program, while designed using the modular structure to facilitate flexible timetabling and instructional delivery, does not mandate the degree of flexibility a school or teacher will offer. The teacher and school will determine the degree of flexibility available to the student. Within the instructional plan established by the school, the student may:

- be given the opportunity to progress at a rate that is personally challenging
- have increased opportunity to select the courses that develop competencies he or she finds most relevant.

Integrating Basic Competencies

The basic competencies relate to managing learning and resources, problem solving and innovation, communicating effectively, working with others and demonstrating responsibility are developed throughout the CTS program, and within each 1-credit course.

Assessment of student achievement on the basic competencies is integrated throughout the other general outcomes. Refer to Section G (Assessment Tools) of this Guide for the description of student behaviours expected at each of the four developmental stages defined for the basic competencies.

Assessment of basic competencies could include input and reflection involving the student, teacher(s), peers and others. Description of the observed behaviour could be provided through a competency profile for the course. Positive, ongoing interaction between the student and teacher will support motivation for student growth and improvement.

Assessing Student Achievement

Assessing student achievement is a process of gathering information by way of observations of process, product and student interaction.

Where appropriate, assessment tools have been defined to assist the teacher and student in the assessment. Refer to Section G (Assessment Tools) of this Guide for copies of the various tools (worksheets, checklists, sample questions, etc.).

A suggested emphasis for each general outcome has also been established. The suggested emphasis provides a guideline to help teachers determine time allocation and/or the appropriate emphasis for each general outcome and the student grade.

Recognizing Student Achievement

At the high school level, successful demonstration of the exit-level competencies in a course qualifies the student for one credit. Refer to Section A of this Guide for more detailed information about how curriculum and assessment standards are defined in CTS. Refer to the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* for more information on how student achievement can be recognized and reported at the school and provincial levels.

Portfolios

When planning for instruction and assessment, consider a portfolio as an excellent tool to provide evidence of a student's effort, progress and achievement. Portfolios will aid students in identifying skills and interest. They also provide the receiving teacher, employer and/or post-secondary institution proof of a student's accomplishments. The make-up and evaluation of the portfolio should be a collaborative agreement between the student and teacher.

Resources

A comprehensive resource base, including print, software and audio-visual, has been identified to support CTS strands. It is intended that these resources form the basis of a resource centre, encouraging teachers and students to access a wide selection of resources and other information sources throughout the learning process. Unless otherwise noted, these resources are considered to be suitable for both junior and senior high school students.

Refer to Section I (Learning Resource Guide) to obtain directions for accessing up-to-date information about learning resources that have been identified to support the delivery of CTS courses in this strand.

Sample Student Learning Guides

In addition to the resources, Sample Student Learning Guides are available (refer to Section J of this Guide). These samples, designed for individual student or small group use, provide an instructional plan for selected courses and include the following components:

- Why take this course?
- What are the entry-level competencies?
- What are the exit-level competencies?
- What resources may be accessed?
- What assignments/activities must be completed?
- What are the timelines?
- How will the final mark be calculated?

Sample Student Learning Guides have been developed for the following courses in Information Processing:

- INF1020 Keyboarding 1
- INF1030 Word Processing 1.

PLANNING FOR INFORMATION PROCESSING

The following suggestions are provided to assist teachers, schools and school system administrators as they plan to deliver courses in the Information Processing strand.

Selecting Courses

The scope and sequence chart in Section B provides an overview of the Information Processing courses, indicating prerequisites and theme areas. Brief descriptions of each of the courses follow the scope and sequence chart in Section B.

Information Processing in Junior High

The introductory level courses may be offered at junior high. Because many students entering junior high school may be familiar with computers, it is important to determine the level of competence students have in relation to the competencies defined for the courses.

The number of courses offered will vary according to the time available throughout Grades 7, 8 and 9:

Time Available	Courses
25 hours	Computer Operations
50 hours	Computer Operations Keyboarding 1
75–100 hours	add one of the following: Word Processing 1 Graphics Tools Database 1 Spreadsheet 1 Hypermedia Tools Programming 1

Where appropriate, junior high school students may also take intermediate level courses, particularly in the Text/Data Input and Productivity Software themes.

Courses may be combined into courses and offered within a school year or over a span of a few years.

Information Processing in Senior High

Following are a few examples of course groupings into sample courses:

5 credits (no previous experience)	Computer Operations Keyboarding 1 Word Processing 1 Database 1 Spreadsheet 1
3 credits (strong background from junior high school or through personal experience)	Keyboarding 1 Database 1 Spreadsheet 1
5–15 credits (foundation for entry into workplace as computer technician)	Computer Operations Keyboarding 1 Word Processing 1 Database 1 Spreadsheet 1 and courses selected from System Operations theme and Programming theme
5–15 credits (foundation for entry into workplace into administrative support positions)	Keyboarding 2 Word Processing 2 Database 2 Spreadsheet 2 Electronic Publishing 1 and courses selected from the Applied Processing theme and Productivity Software theme

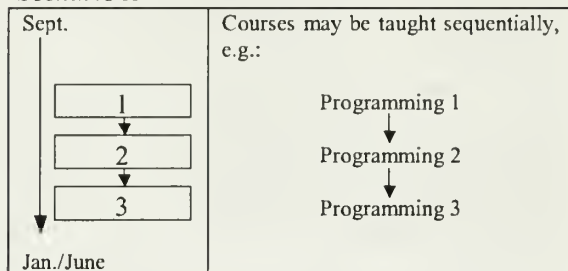
Courses could also be clustered into multiple-credit offerings that emphasize a particular theme.

Organizing for Learning

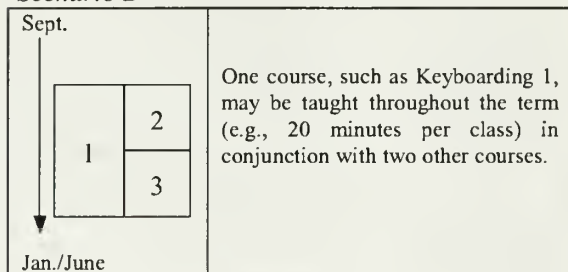
Before selecting courses, teachers should check the course parameters outlined in each course (see Sections D, E and F of this Guide).

Individual 1-credit courses can be delivered sequentially, concurrently or combined. For example, although the courses in the Text/Data Input theme and the Programming theme are sequential, they can be combined with courses from the System Operations theme, the Productivity Software theme, or the Applied Processing theme; e.g.:

Scenario A

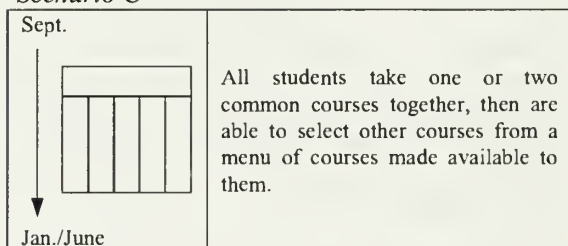


Scenario B

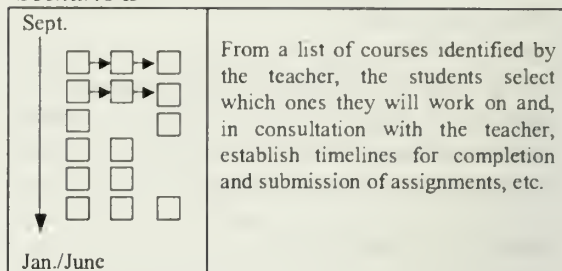


Teachers can also allow students to progress at a rate that is personally challenging; e.g.:

Scenario C



Scenario D



Recurring Concept—Workstation Management

Each course in Information Processing requires students to consistently apply appropriate workstation routines. This requires students to demonstrate responsibility and professionalism throughout the instruction period as they:

- manage and use the workstation and related resources
- make efficient and effective use of their own and others' time
- learn in as independent a manner as possible
- use related terminology appropriately, both verbally and in print.

An emphasis of 10 percent has been allocated in each course for workstation management.

Identifying Linkages

Section H of this Guide describes some of the linkages that are possible between the Information Processing strand and other CTS strands.

Project and practicum courses are **not** designed to be offered as distinct courses and should **not** be used to extend Work Experience 15, 25 and 35 courses.

Improving Smooth Transition to the Workplace and/or Related Post-secondary Programs

Refer to Section H of this Guide for potential transitions students may make into the workplace and/or related post-secondary programs or other avenues for further learning.

COURSE INF1010: COMPUTER OPERATIONS**Level:** Introductory**Theme:** Systems Operations**Prerequisite:** None

Description: Students develop personal use skills basic to all courses in the Information Processing strand in the following applications: file management, basic hardware and software operations, text entry and workstation routines.

Parameters: Computer workstation, disk, word processing software, support resources.

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<i>The student will:</i> <ul style="list-style-type: none">demonstrate basic file management skills	<i>Assessment of student achievement should be based on:</i> <ul style="list-style-type: none">demonstrating effective and efficient file management techniques. <i>Assessment Tool</i> <i>Assessment Checklist A: File Management Procedures (INF1010-1)</i> <i>Standard</i> <i>All procedures must be demonstrated</i>	10
<ul style="list-style-type: none">enter text and data, using the proper touch keyboarding technique	<ul style="list-style-type: none">demonstrating touch keyboarding technique. <i>Assessment Tool</i> <i>Assessment Checklist B: Text-Data Entry (INF1010-1)</i> <i>Standard</i> <i>All procedures must be demonstrated</i>	50
<ul style="list-style-type: none">identify components of a computer workstation and basic functions of a computer	<ul style="list-style-type: none">identifying and explaining use of computer workstation components. <i>Assessment Tool</i> <i>Assessment Checklist C: Computer Workstation Components (INF1010-1)</i> <i>Standard</i> <i>All procedures must be demonstrated</i>	10

COURSE INF1010: COMPUTER OPERATIONS (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> describe one or more recent initiatives or issues in technological development 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> preparing a report (oral, print or multimedia). The report will provide a clear and concise description of: <ul style="list-style-type: none"> current or emerging technological initiative or issue actual or potential impact on individual and society a list of sources of information. <p><i>Assessment Tool</i> <i>Assessment Guide: Presentations and Reports (INF1010-2)</i></p> <p><i>Standard</i> <i>Rating of 1 on each component</i></p>	20
<ul style="list-style-type: none"> apply, consistently, appropriate workstation routines 	<ul style="list-style-type: none"> demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 1 – Workstation Use 1 – Time Management/Organization 2 – Professionalism</p>	10
<ul style="list-style-type: none"> demonstrate basic competencies. 	<ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	Integrated throughout

MODULE INF1010: COMPUTER OPERATIONS (continued)

Concept	Specific Learner Expectations	Notes
File Management	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • use appropriate commands to boot/access computer system(s): <ul style="list-style-type: none"> – standalone – network • demonstrate ability to: <ul style="list-style-type: none"> – create, name, save and close files – retrieve and open files – print files. 	
Text/Data Entry	<ul style="list-style-type: none"> • demonstrate “touch keyboarding” skills with alphabetic and basic punctuation keys using proper techniques characterized by: <ul style="list-style-type: none"> – correct fingering – appropriate body position – acceptable eye focus • proofread and edit text or data as appropriate to ensure error-free documents, including: <ul style="list-style-type: none"> – manually proofread copy and compare copy with original text on: <ul style="list-style-type: none"> • screen • hard copy – use software editing functions (spell check, grammar checks). 	The emphasis is on developing touch stroking, using correct fingering. Keyboarding speed is developed in the Keyboarding modules.
Workstation Components and Computer Functions	<ul style="list-style-type: none"> • identify and describe basic computer functions, related to the workstation hardware and software that is in use, including: <ul style="list-style-type: none"> – hardware architecture, configurations and peripherals: <ul style="list-style-type: none"> • input (keyboard, scanners, voice, etc.) • processing • storage • output (screen, printer) • telecommunications – types of software: <ul style="list-style-type: none"> • system • application • utility – key procedures: <ul style="list-style-type: none"> • operating • backup • preventive/emergency • use related terminology appropriately. 	

MODULE INF1010: COMPUTER OPERATIONS (continued)

Concept	Specific Learner Expectations	Notes
Initiatives and Issues in Technology	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • research one or more recent initiatives or issues that relate to computer technology • prepare a report (verbal, print or multimedia) that: <ul style="list-style-type: none"> – provides a clear and concise description of the initiative or issue – describes actual or potential impact on the individual and/or society in – lists sources of information. 	<p>Topics could relate to initiatives or issues in:</p> <ul style="list-style-type: none"> – personal life – professional life – privacy – security – ethical – computer infections (viruses, worms) – future trends.
Workstation Management	<ul style="list-style-type: none"> • apply efficient workstation position and routines that encourage: <ul style="list-style-type: none"> – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work • demonstrate efficient and appropriate use of time and resources: <ul style="list-style-type: none"> – start-up procedures – organization of work area – closing procedures • apply effective decision-making strategies in production assignments: <ul style="list-style-type: none"> – plan activities – organize data, information, resources – consider alternatives – evaluate activities/results • use related terminology to describe basic processes, procedures and tools. 	

COURSE INF1020: KEYBOARDING 1**Level:** Introductory**Theme:** Text/Data Input**Prerequisite:** None**Description:** Students develop accurate touch keystroking of text and data appropriate to personal use and the application of efficient workstation procedures.**Parameters:** Computer workstation, disk, word processing software, support resources.**Curriculum and Assessment Standards**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate keyboarding competence: <ul style="list-style-type: none"> text entry at 20 words per minute (wpm) numeric entry at 80 keystrokes per minute (kpm) technique 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> three timed writings, each from different straight copy material, over a period of no more than five consecutive class periods, which demonstrates proper touch keyboarding : <ul style="list-style-type: none"> on alphabetic keys <ul style="list-style-type: none"> one-minute duration maximum one uncorrected error SI ≤ 1.2 minimum keystroke rate: 20 words per minute on numeric keypad: <ul style="list-style-type: none"> one-minute duration maximum one uncorrected error minimum keystroke rate 80 numeric keystrokes per minute on 1 to 3 digit numbers. <p><i>Assessment Tool</i> <i>Reference Chart: Keyboarding and Numberpad Rates (INFKEYNB)</i></p> <ul style="list-style-type: none"> observations over the last quarter of the learning period, during timing and drill work. <p><i>Assessment Tool</i> <i>Assessment Checklist: Text–Data Entry (INFTDENT)</i></p> <p><i>Standard</i> <i>Rating of:</i> 3 – Eye Focus 2 – Keystroking 1 – Service Keys 2 – Body Position</p>	<p>30</p> <p>10</p> <p>40</p>

COURSE INF1020: KEYBOARDING 1 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • apply, consistently, appropriate workstation routines 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> <i>1 – Workstation Use</i> <i>2 – File Management</i> <i>1 – Time Management/Organization</i> <i>2 – Professionalism</i></p>	20
<ul style="list-style-type: none"> • demonstrate basic competencies. 	<ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	Integrated throughout

Concept	Specific Outcomes	Notes
Text Entry	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • demonstrate increasingly rapid, accurate touch keystroking on straight copy of: <ul style="list-style-type: none"> – alphabetic keys – punctuation keys (.,:;?) – service keys (enter, shift, delete, backspace, tab) • use function and cursor movement keys efficiently • demonstrate correct keystroking technique <ul style="list-style-type: none"> – enter text using designated fingers – maintain home-row position – demonstrate correct posture (hand, arm, body) • demonstrate touch entry of numbers on number pad using correct fingering 	<p>Technique is the major focus emphasizing touch development on easy material.</p> <p>Develop speed and accuracy at the word and phrase level using short, repetitive timings (12 seconds to one minute) with straight copy text of varying SI (1.0–1.3).</p> <p>Introduce only the word processing and computer commands that are required as an instructional tool for developing keyboarding skill.</p>

COURSE INF1030: WORD PROCESSING 1**Level:** Introductory**Theme:** Productivity Software**Prerequisite:** None

Description: Students develop skill in using basic commands and functions in word processing software, including document editing, and the formatting and printing of reports, correspondence and tables suitable for personal use applications.

Parameters: Computer workstation, disk, word processing software, support resources.

Supporting Course: INF1020 Keyboarding I

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none">• demonstrate correct use of software functions, by producing mailable, properly formatted:<ul style="list-style-type: none">– paginated reports with headings and references– letters with basic components– two-column tables with main headings and subheadings	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none">• producing mailable documents, based on formatted and unformatted sources, focusing on the use of basic software functions for personal use applications including a collection of:<ul style="list-style-type: none">– reports, including applications such as essays, poems, research reports, journal responses, recipes, notices and posters– one-page letters, including applications such as personal and personal business letters– tables, including applications such as calendars, lists, daybooks, agendas and display documents. <p><i>Assessment Tool</i> <i>Assessment Checklist: Word Processing (INFWP)</i></p> <p><i>Standard</i> <i>Rating of 1 in the production of mailable documents (no errors in text and well formatted)</i></p>	<p>30</p> <p>30</p> <p>30</p>

COURSE INF1030: WORD PROCESSING 1 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • apply, consistently, appropriate workstation routines • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> <i>1 – Workstation Use</i> <i>2 – File Management</i> <i>1 – Time Management/Organization</i> <i>2 – Professionalism</i></p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>10</p> <p>Integrated throughout</p>

Concept	Specific Outcomes	Notes
Software Functions and Applications	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe key features of the word processing software package: <ul style="list-style-type: none"> – capabilities – system requirements – platform options – command structure • use help functions and references as appropriate • demonstrate appropriate key commands to: <ul style="list-style-type: none"> – open/create/update files – name files – close files 	<p>Integrate the learning of software functions and the production of documents with other subject areas such as Language Arts /English, Social Studies, Science.</p>

COURSE INF1040: GRAPHICS TOOLS

Level: Introductory

Theme: Productivity Software

Prerequisite: None

Description: Students learn the basic commands and functions of computer graphics software, including bitmapped graphics (paint program) and vector graphics (draw program). Students also develop basic skills in manipulating existing graphics, as well as in producing their own graphics.

Parameters: Computer workstation, disk, a selection of graphics software, support resources.

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<i>The student will:</i> <ul style="list-style-type: none">demonstrate the basic elements and principles of design, by using computer software graphics tools to:<ul style="list-style-type: none">duplicate graphics designs	<i>Assessment of student achievement should be based on:</i> <ul style="list-style-type: none">reproduction of documents using paint/draw software programs consisting of:<ul style="list-style-type: none">textgraphics (paint, draw and/or imported)use of design principles. <i>Assessment Tool</i> <i>Assessment Checklist: Electronic Publishing Document Production (INFEPDOC)</i> <i>Standard</i> <i>Rating of 1 in the reproduction of well-designed graphic layouts</i>	30
<ul style="list-style-type: none">create graphics layouts	<ul style="list-style-type: none">creation of original documents using paint/draw software programs consisting of:<ul style="list-style-type: none">textgraphics (paint, draw and/or imported)use of design principles. <i>Assessment Tool</i> <i>Assessment Checklist: Electronic Publishing Document Production (INFEPDOC)</i> <i>Standard</i> <i>Rating of 1 in the production of well-designed graphic layouts</i>	30

COURSE INF1040: GRAPHICS TOOLS (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate use of software functions 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> using the appropriate commands, functions and graphic tools including: <ul style="list-style-type: none"> file functions—create/save/load files editing functions (cut/copy/move/paste/delete) import graphic (clip art and/or scan) text tools including style palette paint tool (colour, fill, texture) draw tools (line, rectangle, oval, cropping) output functions (preview and print). <p><i>Assessment Tool</i> <i>Assessment Checklist: Electronic Publishing Software Functions (INFEPSF)</i></p> <p><i>Standard</i> <i>Rating of 1 in the demonstration of appropriate software functions</i></p>	30
<ul style="list-style-type: none"> apply, consistently, appropriate workstation routines 	<ul style="list-style-type: none"> demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 1 – Workstation Use 2 – File Management 1 – Time Management/Organization 2 – Professionalism</p>	10
<ul style="list-style-type: none"> demonstrate basic competencies. 	<ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	Integrated throughout

MODULE INF1040: GRAPHICS TOOLS (continued)

Concept	Specific Learner Expectations	Notes
Software Functions and Applications	<p><i>The student should:</i></p> <ul style="list-style-type: none"> describe key features of the graphic software packages available: <ul style="list-style-type: none"> capabilities system requirements platform options command structure use help functions and references as appropriate demonstrate use of appropriate commands, functions and tools, such as: <ul style="list-style-type: none"> copy, paste, cut ovals, rectangles, line and polygons marque, lasso eraser fills line options; e.g., arrows, patterns inserting (placing) resizing repositioning rulers column guides alignment letter spacing leading kerning typefaces (font, style) indent tabs cropping create/load/merge/import/scan graphic elements/objects/files: <ul style="list-style-type: none"> presentation graphics (charting/diagramming/drawing) paint resident functions (clip art) demonstrate use of tools such as: <ul style="list-style-type: none"> pixel bit-mapped object-oriented images line/geometric object-oriented images using vector graphics demonstrate use of computer-aided design, if available: <ul style="list-style-type: none"> create computer graphics for design, drafting, documentation purposes demonstrate use of screen capture/graphics conversion: <ul style="list-style-type: none"> integrate all forms of graphic elements including clip art design/merge/format/edit page (text/data/graphics). 	<p>Pixel and vector graphics are two basic software approaches to the production of images and range from free drawing screen activities to computer generated/controlled graphic designed elements. Graphics software includes toolboxes and palettes, presentations, desktop publishing, artistic creations, space exploration, weather forecasting, computer animation and computer-aided design.</p>

MODULE INF1040: GRAPHICS TOOLS (continued)

Concept	Specific Learner Expectations	Notes
Document Production	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • practise reproducing a variety of documents from a variety of sources using paint/draw software • apply basic design elements and principles when creating documents • use three-dimensional effects to create depth in documents • design and create various documents using paint/draw programs • use clip art to enhance document production • create own graphics using available paint and draw tools to enhance document • preview and print documents. 	<p>For example: line, shape, texture, colour, balance, proportion, contrast, harmony, unity.</p> <p>For example: use of overlapping, perspective, light and dark images, small and large images.</p> <p>For example: letterheads, business cards, advertisement, posters, title pages, logos, packaging, front view of home, floor plan, map to your home.</p>
Workstation Management	<ul style="list-style-type: none"> • apply efficient workstation position and routines that encourage: <ul style="list-style-type: none"> – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work • demonstrate efficient and appropriate use of time and resources: <ul style="list-style-type: none"> – start-up procedures – organization of work area – closing procedures • apply effective decision-making strategies in production assignments: <ul style="list-style-type: none"> – plan activities – organize data, information, resources – consider alternatives – evaluate activities/results • use related terminology to describe basic processes, procedures and tools. 	

COURSE INF1050: DATABASE 1**Level:** Introductory**Theme:** Productivity Software**Prerequisite:** None

Description: Students are introduced to the basic commands and functions of database software, and demonstrate how this software can be used as a personal tool in data and information management.

Parameters: Computer workstation, disk, database software, support resources.

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none">• demonstrate basic electronic database software competence, by:<ul style="list-style-type: none">– creating databases	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none">• creating database files/records to solve problems using basic database software functions:<ul style="list-style-type: none">– define problem (e.g., manage information, make decisions)– plan, design and create databases to solve problems– enter data into database files– display and print files– use of appropriate software commands and functions to create database files, enter data and print. <p><i>Assessment Tool</i> <i>Assessment Checklist: Databases (INFDB)</i></p> <p><i>Standard</i> <i>Rating of 1 in the creation of error-free, well-designed database files</i></p>	45

COURSE INF1050: DATABASE 1 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> manipulating data and preparing reports 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> manipulating database files in the preparation of reports: <ul style="list-style-type: none"> search/query database files to retrieve selected information plan and present selected data visually through the creation of reports use appropriate software commands and functions to query/search database files and create reports. analyze data to make recommendations and conclusions. <p><i>Assessment Tool</i> <i>Assessment Checklist: Databases (INFDB)</i></p> <p><i>Standard</i> <i>Rating of 1 in the creation of error-free, well-designed reports</i></p>	45
<ul style="list-style-type: none"> apply, consistently, appropriate workstation routines 	<ul style="list-style-type: none"> demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 1 – Workstation Use 2 – File Management 1 – Time Management/Organization 2 – Professionalism</p>	10
<ul style="list-style-type: none"> demonstrate basic competencies. 	<ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	Integrated throughout

COURSE INF1060: SPREADSHEET 1**Level:** Introductory**Theme:** Productivity Software**Prerequisite:** None**Description:** Students have an opportunity to use basic functions and commands in spreadsheet software for general data manipulation and personal record keeping.**Parameters:** Computer workstation, disk, spreadsheet software, support resources.**Curriculum and Assessment Standards**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<i>The student will:</i> <ul style="list-style-type: none">• demonstrate basic electronic spreadsheet software competence, by:<ul style="list-style-type: none">– creating spreadsheets	<i>Assessment of student achievement should be based on:</i> <ul style="list-style-type: none">• creating spreadsheets to solve problems using basic spreadsheet software functions:<ul style="list-style-type: none">– define problems (e.g., manage information, make decisions)– plan, design and create spreadsheets to solve problems– enter data onto spreadsheets– preview/print spreadsheets– use appropriate software commands and functions to create spreadsheets, enter data and print. <i>Assessment Tool</i> <i>Assessment Checklist: Spreadsheets (INFSS)</i> <i>Standard</i> <i>Rating of 1 in the creation of error-free, well-designed spreadsheets</i>	45
<ul style="list-style-type: none">– manipulating data and preparing chart graphs	<ul style="list-style-type: none">• manipulating data in spreadsheets to visually present data in chart graph format:<ul style="list-style-type: none">– select data from spreadsheet to present in graphic format– select appropriate graph to present data– plan and present data visually through the creation of chart graphs– use appropriate software commands and functions to create visually pleasing detailed graphs– analyze data to draw conclusions and recommendations.	45

COURSE INF1060: SPREADSHEET 1 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • apply, consistently, appropriate workstation routines • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <p><i>Assessment Tool</i> <i>Assessment Checklist: Spreadsheets (INFSS)</i></p> <p><i>Standard</i> <i>Rating of 1 in the creation of error-free, well-designed chart graphs</i></p> <ul style="list-style-type: none"> • demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> <i>1 – Workstation Use</i> <i>2 – File Management</i> <i>1 – Time Management/Organization</i> <i>2 – Professionalism</i></p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>10</p> <p>Integrated throughout</p>

COURSE INF1070:	HYPERMEDIA TOOLS
Level:	Introductory
Theme:	Productivity Software
Prerequisite:	None
Description:	Students develop basic skills with tools used for computerized presentations involving text, data, graphics, sound and animation.

Level: Introductory

Theme: Productivity Software

Prerequisite: None

Description: Students develop basic skills with tools used for computerized presentations involving text, data, graphics, sound and animation.

Parameters: Computer workstation, disk, hypermedia software, support resources.

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • demonstrate basic hypermedia software competence, by: <ul style="list-style-type: none"> – accessing hypermedia tools – applying hypermedia tools to produce a short presentation – using hypermedia tools to edit a short presentation 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • production of a short presentation consisting of the following: <ul style="list-style-type: none"> – planning: <ul style="list-style-type: none"> • demonstrate ability to use software commands and functions of selected hypermedia software program • make decisions regarding text, sound, graphics, video and animation • prepare a storyboard – producing the presentation by using appropriate software commands and functions to: <ul style="list-style-type: none"> • select, enhance and manipulate text • select and manipulate graphics • select and manipulate sound • insert premade video clip • create a frame, object or cell-based animation clip – editing the presentation by: <ul style="list-style-type: none"> • proofreading for spelling and accuracy of facts • check graphics • test program links to make sure they work appropriately • edit to enhance the quality of the presentation. <p><i>Assessment Tool</i> <i>Assessment Checklist: Multimedia Software Functions (INFMMSF) and Multimedia Productions and Presentations (INFMMDOC)</i> <i>Standard</i> <i>Rating of 1 in the production of presentation</i></p>	<p>20</p> <p>50</p> <p>20</p>

COURSE INF1070: HYPERMEDIA TOOLS (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • apply, consistently, appropriate workstation routines • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> <i>1 – Workstation Use</i> <i>2 – File Management</i> <i>1 – Time Management/Organization</i> <i>2 – Professionalism</i></p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>10</p> <p>Integrated throughout</p>

Concept	Specific Outcomes	Notes
Multimedia Skills	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • access hypermedia program • tour program with direction • select and use teacher-specified program components • complete tasks assigned covering accessing and manipulating: <ul style="list-style-type: none"> – text – data – graphics – sound – animation. 	<p>Skills are built in this part of the course that can be applied in the production of the presentation.</p> <p>Teachers will need to determine the extent of the skill development required by their students.</p>

COURSE INF1080: PROGRAMMING 1**Level:** Introductory**Theme:** Programming**Prerequisite:** None

Description: Students are introduced to computer programming languages and a structured programming environment, and they construct algorithms and code instructions to solve identified problems.

Parameters: Workstation, programming language, language code manual, support resources.

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none">• demonstrate basic computer programming skills, by:<ul style="list-style-type: none">– creating algorithms to solve problems– applying introductory, structured computer coding programming skills	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none">• developing programs that demonstrate the ability to solve problems through the efficient use of algorithms and language syntax. Demonstrate ability to:<ul style="list-style-type: none">– use a linear algorithm to provide a solution to a problem– arrange the components of the problem in the categories of input, process and output– interpret the output required– use language-specific techniques to assign values to variables and constants– employ language-specific mathematical operators for addition, subtraction, multiplication, division– illustrate language-specific structures for output formatting– test specific data to verify the validity of the program– document program internally and externally. <p><i>Assessment Tools</i> <i>Assessment Checklist: Introductory and Intermediate Programming (INFPRGM1)</i> <i>Programming: Sample Assignment 1A (INFPSAM1)</i></p> <p><i>Standard</i> <i>Rating of 1 in all phases of program development</i></p>	90

COURSE INF1080: PROGRAMMING 1 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • apply, consistently, appropriate workstation routines • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> <i>1 – Workstation Use</i> <i>2 – File Management</i> <i>1 – Time Management/Organization</i> <i>2 – Professionalism</i></p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>10</p> <p>Integrated throughout</p>

Concept	Specific Outcomes	Notes
Computer Software	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • explain how software is the interface between humans and computer hardware and converts general-purpose computers into specialized problem-solving systems • describe the purpose of system software: <ul style="list-style-type: none"> – operating systems (command-driven, icon-driven) – language translators (assemblers, compilers, interpreters) – utilities (preprogrammed functions) • describe application software: <ul style="list-style-type: none"> – application packages (text, data, graphics, process control, simulations) – customized programs (written for specific organizational function) • differentiate between integrated and dedicated software 	

COURSE INF1090: INFORMATION HIGHWAY 1**Level:** Introductory**Theme:** Dynamic Environment**Prerequisite:** None**Description:** Students develop personal use Internet skills for accessing and communicating data and information, with particular emphasis on the world wide web and email.**Parameters:** Access to a computer workstation and the Internet.**Supporting Course:** INF1030 Word Processing I**Curriculum and Assessment Standards**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<i>The student will:</i> <ul style="list-style-type: none">demonstrate knowledge of the history of the Internet and of its basic functions	<i>Assessment of student achievement should be based on:</i> <ul style="list-style-type: none">a project related to:<ul style="list-style-type: none">history of the Internetaccess to Internetusing basic terminology and commandsexploring the Internet to discover its potentialfinding information regarding proper “netiquette” (Internet etiquette)personal safety and security. <i>Assessment Tool</i> <i>Assessment Guide: Information Highway 1 – Getting Started (INF1090–1)</i> <i>Standard</i> <i>Rating of 1 for each applicable task</i>	20
<ul style="list-style-type: none">demonstrate ability to communicate with others through the Internet	<ul style="list-style-type: none">communicating through the Internet (internal or external) using e-mail and at least one other of the following:<ul style="list-style-type: none">on-line chattingnewsgroupsmailing lists/listservsother technologies as they emerge.(Note: This is a dynamic list that changes rapidly as technologies come and go; learning opportunities should reflect what is currently available.) <i>Assessment Tool</i> <i>Assessment Guide: Information Highway 1 – Communicating (INF1090–1)</i> <i>Standard</i> <i>Rating of 1 for each applicable task</i>	30

COURSE INF1090: INFORMATION HIGHWAY 1 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate ability to access and report specific information from the world wide web 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> accessing specific information through a prescribed research topic: <ul style="list-style-type: none"> use a variety of directories and search engines to locate specific information download information cut/paste/edit, format collected data into a report/presentation properly cite information from Internet sources. <p><i>Assessment Tool</i> <i>Assessment Guide: Information Highway 1 – Access and Report Specific Information (INF1090-1)</i></p> <p><i>Standard</i> <i>Rating of 1 for each applicable task</i></p>	40
<ul style="list-style-type: none"> apply, consistently, appropriate workstation routines 	<ul style="list-style-type: none"> demonstration of appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 1 – Workstation Use 2– File Management 1– Time Management/Organization 2– Professionalism</p>	10
<ul style="list-style-type: none"> demonstrate basic competencies. 	<ul style="list-style-type: none"> observation of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	Integrated throughout

MODULE INF1090: INFORMATION HIGHWAY 1 (continued)

Concept	Specific Learner Expectations	Notes
Getting Started	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • explain the difference between the Internet and the World Wide Web • define and describe the Internet; e.g., FTP, www, gopher, telnet • identify various uses of the Internet for: <ul style="list-style-type: none"> – personal use – educational use – business use • compare functions and terminology between e-mail, the Internet and commercial on-line services • define and identify service providers • use compatible software to access the Internet • access web site addresses • describe ethical uses of the Internet • locate and discuss information related to netiquette (network etiquette) • research issues and strategies related to maintaining personal safety and security • read, describe and sign required consent form regarding acceptable use policies as set out by provider of service. 	<p>Exchange ideas, retrieve information for research and personal use, try software, move information to others, requirement for future employment, on-line chats, shopping, advertising.</p> <p>Many school districts require students to sign a consent form before access to Internet is allowed.</p>
Communicating	<ul style="list-style-type: none"> • use an e-mail program: <ul style="list-style-type: none"> – gain access to mail – obtain and use an e-mail address – practise sending mail to self and others – send attachments/enclosures – access mailbox; read and file mail – reply to an e-mail message sent to him or her – organize mailbox (file, delete, save messages to student's own account) • research live chat sites, newsgroups, listservs • describe and/or use net phone • identify other emerging communication strategies related to the Internet. 	<p>Note: Internal e-mail can be used to simulate Internet e-mail.</p>

MODULE INF1090: INFORMATION HIGHWAY 1 (continued)

Concept	Specific Learner Expectations	Notes
Finding, Collecting, Editing and Reporting Data	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify net servers and when to use each • identify search engines • use search engines efficiently • research various web sites within the Internet: <ul style="list-style-type: none"> – use search engines – access files – use menu alternatives (bookmarks, icons, keying in) • read and print file(s) • download files and/or sites (text, sound, graphics, video) • cut/paste/edit and format collected data into a report/presentation • properly cite Internet sources • use bookmarks (add, delete). 	<p>See <i>PC World</i>, Jan./96, pp. 125–129, for searching techniques.</p> <p>Note: A teacher-directed research project is more appropriate at this level.</p> <p>See latest edition of APA manual.</p>
Workstation Management	<ul style="list-style-type: none"> • apply efficient workstation positions and routines that encourage: <ul style="list-style-type: none"> – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work • demonstrate efficient and appropriate use of time and resources: <ul style="list-style-type: none"> – start-up procedures – organization of work area – closing procedures • apply effective decision-making strategies when using the Internet and on-line commercial services • use related terminology to describe basic protocols, processes and tools. 	

COURSE INF2010: WORKSTATION OPERATIONS

Level: Intermediate

Theme: System Operations

Prerequisite: None

Course Description: Students learn computer workstation operations, including computer architecture, peripherals, configurations, operating system environments and platforms, utility software, diagnostic and protection software, hard drive file updating and maintenance, support resource application and troubleshooting activities.

Course Parameters: Computer workstation, disk, utility software, support resources.

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none">• use file management procedures efficiently• install and use software to support the integrity of workstation hardware	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none">• a workstation project demonstrating the ability to<ul style="list-style-type: none">– set up and install a system:<ul style="list-style-type: none">• identify need of users and tools (software, hardware)• design a plan for installation and configuration of the system• organize tools for installation and configuration• use manuals during the set-up and installation process• connect hardware (e.g., system and cabling)• install software (well-organized and appropriately named directories on specified drive) for a variety of software including operating system, applications and utilities. <p><i>Assessment Tool</i> <i>Assessment Guide: Workstation Operations, Set Up and Install a System (INF2010-1)</i></p> <p><i>Standard</i> <i>Rating of 2 in each applicable task</i></p>	50

COURSE INF2010: WORKSTATION OPERATIONS (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • configure and maintain workstation hardware 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> – troubleshoot software and hardware: <ul style="list-style-type: none"> • test system after installation • test system with users for satisfaction • build a defence system against viruses • build a defence system against intentional and unintentional use exploration • identify and organize available resources for users (e.g., help, tutorials, manuals, courseware) – manage and maintain a system: <ul style="list-style-type: none"> • outline long-term plan for upgrading technology • establish policy and procedures of effective use of the technology • provide training and support for those using system. <p><i>Assessment Tool</i> <i>Assessment Guide: Workstation Operations (INF2010-1)</i> <i>Standard</i> <i>Rating of 2 in each applicable task</i></p>	40
<ul style="list-style-type: none"> • apply, consistently, appropriate workstation routines 	<ul style="list-style-type: none"> • demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i> <i>Standard</i> <i>Rating of:</i> 2 – Workstation Use 3 – File Management 2 – Time Management/Organization 3 – Professionalism</p>	10
<ul style="list-style-type: none"> • demonstrate basic competencies. 	<ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	Integrated throughout

COURSE INF2060: ELECTRONIC PUBLISHING 1**Level:** Intermediate**Theme:** Productivity Software**Prerequisite:** INF1030 Word Processing I**Description:** Students develop skill, using electronic/desktop publishing software to create a variety of camera-ready documents.**Parameters:** Computer workstation, disk, electronic/desktop publishing software, support resources.**Supporting Course:** INF1040 Graphics Tools**Curriculum and Assessment Standards**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<i>The student will:</i> <ul style="list-style-type: none">demonstrate basic electronic publishing software competence, by using page make-up tools and commands to produce camera-ready publications	<i>Assessment of student achievement should be based on:</i> <ul style="list-style-type: none">reproducing accurate, well-designed one- and two-page camera-ready publications focusing on the use of basic software functions and layout principles including:<ul style="list-style-type: none">– use of basic formatting functions– use of page make-up tools (including pointer, line, text, rectangle, oval, cropping, etc.)– basic editing functions– layout principles such as optical centre, balance, white space, columns, Z pattern, contrast, rhythm, unity. <i>Assessment Tools</i> <i>Assessment Checklist: Electronic Publishing Software Functions (INFEPSF)</i> <i>Assessment Checklist: Electronic Publishing Document Production (INFEPDOC)</i> <i>Standard</i> <i>Rating of 2 in the production of accurate, well-designed publications</i>	45

COURSE INF2060: ELECTRONIC PUBLISHING 1 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p>	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> creating accurate, well-designed one- and two-page original publications focusing on continued use of basic software functions and layout principles including: <ul style="list-style-type: none"> text (body and display) graphics and/or artwork text and graphic enhancement the following of copyright laws layout principles such as optical centre, balance, white space, columns, Z pattern, contrast, rhythm, unity. <p><i>Assessment Tools</i> <i>Assessment Checklist: Electronic Publishing Software Functions (INFEPSF)</i> <i>Assessment Checklist: Electronic Publishing Document Production (INFEPDOC)</i></p> <p><i>Standard</i> <i>Rating of 2 in the production of accurate, well-designed publications</i></p>	<p>45</p>
<ul style="list-style-type: none"> apply, consistently, appropriate workstation routines 	<ul style="list-style-type: none"> demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 2 – Workstation Use 3 – File Management 2 – Time Management/Organization 3 – Professionalism</p>	<p>10</p>
<ul style="list-style-type: none"> demonstrate basic competencies. 	<ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>Integrated throughout</p>

COURSE INF2120: SOFTWARE INTEGRATION 1

Level: Intermediate

Theme: Applied Processing

Prerequisites: INF1020 Keyboarding 1
INF1030 Word Processing 1
INF1050 Database 1
INF1060 Spreadsheet 1

Course Description: Students develop document production skills requiring the integration of data, text and graphics.

Course Parameters: Computer workstation, disk, word processing software, support resources.

Supporting Courses: INF1040 Graphic Tools

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate word processing and data management systems/graphics software integration competence, by: <ul style="list-style-type: none"> producing mailable word processing documents that integrate spreadsheet, database and/or graphics in a variety of specific applications apply, consistently, appropriate workstation routines 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> create two- to three-page document(s) (enter, format, edit and print) from unedited, unformatted sources that integrate data, text, and graphics. Documents should make use of two of the following types of software: <ul style="list-style-type: none"> word processing spreadsheet database graphics (paint and draw, clip art files) editing of documents created to produce error-free, well-formatted document(s). <p><i>Assessment Tool</i> <i>Assessment Checklist: Software Integration 1, 2 and 3 (INFINTEG)</i></p> <p><i>Standard:</i> <i>Rating of 1 in the production of accurate and well-formatted documents</i></p> <ul style="list-style-type: none"> demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 2 – Workstation Use 3 – File Management 2 – Time Management/Organization 3 – Professionalism</p>	<p>60</p> <p>30</p> <p>10</p>

COURSE INF2120: SOFTWARE INTEGRATION 1 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>Integrated throughout</p>

Concept	Specific Outcomes	Notes
Document Production	<p><i>The student should:</i></p> <ul style="list-style-type: none"> follow instructions to customize/personalize existing text and data files load, redesign/reformat, modify existing templates/files containing information from database, spreadsheet, graphics files apply word processing, database, spreadsheet and graphics commands as appropriate to import and merge documents into word processing files manipulate word processing, database, spreadsheet, graphics software to produce mailable documents from drafts: <ul style="list-style-type: none"> edited, formatted edited, unformatted unedited, unformatted. 	
Document Editing	<ul style="list-style-type: none"> format/revise documents to be aesthetically pleasing and well formatted describe the purpose of the document: <ul style="list-style-type: none"> target audience single/multiple/presentation copy print and save documents. 	

COURSE INF2140: PROCESS CONTROL**Level:** Intermediate**Theme:** Dynamic Environment**Prerequisites:** INF1070 Hypermedia Tools

Course Description: Students develop skills in robotics/simulation software control by creating, modifying and using programs that incorporate computer-controlled movements and events in robotics/simulation activities and applications.

Course Parameters: Computer workstation, software, support resources.

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none">• demonstrate basic electronic process control software competence, by:<ul style="list-style-type: none">– explaining the theory and processes used to control a robot and/or other simulation	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none">• a presentation (oral, written or visual) explaining basic mechanics and principles of robotics and robotic control:<ul style="list-style-type: none">– describe the types of tasks robots perform– explain how robotics are affecting society now and in the future– diagram a basic robot, labelling components including the controller– describe the functions of labelled components– explain the processes used to control robots– give an example of when it would be feasible to use a robot over a human to perform a task– give an example of when it would be feasible to use a human over a robot to perform a task. <p><i>Assessment Tool</i> <i>Assessment Guide: Process Control Project (INF2140-1)</i> <i>Process Control Sample Project (INFPCSAM)</i></p> <p><i>Standard</i> <i>Rating of 2 in each applicable task</i></p>	25
<ul style="list-style-type: none">– constructing a robot or cause a robot to function as intended through computer control	<ul style="list-style-type: none">• programming a robot: assemble and program a robot to perform a specific task:<ul style="list-style-type: none">– describe the task the robot will perform– follow a blueprint design– program the robot	50

COURSE INF2140: PROCESS CONTROL (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<i>The student will:</i>	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> – assess the design capabilities of the completed robot – test the functionality of the robot to perform task – correct any flaws • demonstrate robot functionality. <ul style="list-style-type: none"> – describe the purpose of the robot – demonstrate the use of robot to perform task – explain how the interrupts are used to control the robot. <p><i>Assessment Tool</i> <i>Assessment Guide: Process Control Project (INF2140-1)</i> <i>Process Control Sample Project (INFPCSAM)</i></p> <p><i>Standard</i> <i>Rating of 2 in each applicable task</i></p>	15
<ul style="list-style-type: none"> • apply, consistently, appropriate workstation routines 	<ul style="list-style-type: none"> • demonstrating appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 2 – Workstation Use 3 – File Management 2 – Time Management/Organization 3 – Professionalism</p>	10
<ul style="list-style-type: none"> • demonstrate basic competencies. 	<ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	Integrated throughout

COURSE INF2190: TELECOMMUNICATIONS 1

Level: Intermediate

Theme: System Operations

Prerequisite: None

Course Description: Students learn how to select and use various wired and wireless telecommunication systems. By using the Internet, they investigate how communication principles, bandwidth, telecommunication infrastructure and wave spectrum affects telecommunication systems.

Course Parameters: Computer workstation, utility software, access to the Internet, support resources.

Supporting Course: INF1090 Information Highway 1

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<i>The student will:</i> <ul style="list-style-type: none">• use selected communication systems, protocols and techniques to transfer messages and manage research• describe the principles of wired and wireless communication systems and how telecommunication systems are affected by bandwidth and wave spectrum	<i>Assessment of student achievement should be based on:</i> <ul style="list-style-type: none">• demonstrating effective and efficient use of at least two communication systems. <i>Assessment Tool</i> <i>Assessment Checklist: Telecommunication Systems Use (INF2190-1)</i> <i>Standard</i> <i>Rating of 2 for all applicable tasks</i>	20
	<ul style="list-style-type: none">• a report or presentation that compares at least two wired and two wireless communication systems in terms of:<ul style="list-style-type: none">– key components– type of information that can be transferred– bandwidth and typical users– comparative cost to install and use– stage of development (status). <i>Assessment Tool</i> <i>Assessment Checklist: Telecommunication Systems Presentation/Report (INF2190-2)</i> <i>Standard</i> <i>Rating of 2 in each applicable task</i>	40
		20

COURSE INF2190: TELECOMMUNICATIONS 1 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> compare and contrast key elements of a telecommunication infrastructure 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> a report or presentation that compares two telecommunication systems in terms of the telecommunication infrastructures: <ul style="list-style-type: none"> – application/service provided – transmission system used – software – standards and protocols – personnel/expertise. <p><i>Assessment Tool</i> <i>Assessment Checklist: Telecommunication Infrastructure Presentation/Report (INF2190–3)</i></p> <p><i>Standard</i> <i>Rating of 2 in each applicable task</i></p>	<p>30</p>
<ul style="list-style-type: none"> apply, consistently, appropriate workstation routines 	<ul style="list-style-type: none"> demonstrate appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 3 – Workstation Use 3 – File Management 3 – Time Management/Organization 3 – Professionalism</p>	<p>10</p>
<ul style="list-style-type: none"> demonstrate basic competencies 	<ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tool noted above</i></p>	<p>Integrated throughout</p>

COURSE INF2200: INFORMATION HIGHWAY 2**Level:** Intermediate**Theme:** Dynamic Environment**Prerequisite:** None**Description:** Students learn how to produce a web page for the Internet.**Parameters:** Access to computer workstation and the Internet.**Supporting Course:** INF1090 Information Highway 1**Curriculum and Assessment Standards**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<i>The student will:</i> <ul style="list-style-type: none">research characteristics of an effective web page	<i>Assessment of student achievement should be based on:</i> <ul style="list-style-type: none">researching and providing examples of effective web pages showing:<ul style="list-style-type: none">– appropriateness to bandwidth available– a visually pleasing design– a suitably organized layout– appropriate links. <i>Assessment Tool</i> <i>Assessment Guide: Information Highway 2 – Researching/Evaluating Tool (INF2200–1)</i> <i>Standard</i> <i>Rating of 2 for all applicable tasks</i>	20
<ul style="list-style-type: none">design, create and present a web page	<ul style="list-style-type: none">designing, creating and presenting a web page(s) with a consistent theme ensuring that:<ul style="list-style-type: none">– the page(s) should include text, graphics, links and anchors– use if made of accepted guidelines of layout and design. <i>Assessment Tool</i> <i>Assessment Guide: Information Highway 2 – Designing/Creating, Documentation/ Presentation (INF2200–1)</i> <i>Standard</i> <i>Rating of 2 for all applicable tasks</i>	50

COURSE INF2200: INFORMATION HIGHWAY 2 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> enhance web page to improve features and functions apply, consistently, appropriate workstation routines demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> presenting changes and describing reasons for change. <i>Assessment Tool</i> <i>Assessment Guide: Information Highway 2 – Enhancing, Documentation/Presentation INF2200-1</i> <i>Standard</i> <i>Rating of 2 for all applicable tasks</i> demonstration of appropriate workstation routines. <i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i> <i>Standard</i> <i>Rating of:</i> 2 – Workstation Use 3 – File Management 2 – Time Management/Organization 3 – Professionalism observation of individual effort and interpersonal interaction during the learning process. <i>Assessment Tool</i> <i>Basic Competencies Reference Guide and assessment tools noted above</i> 	<p>20</p> <p>10</p> <p>Integrated throughout</p>

Concept	Specific Outcomes	Notes
Research and Evaluate	<p><i>The student should:</i></p> <ul style="list-style-type: none"> identify acceptable guidelines for creating web pages list sites that present guidelines for web pages evaluate a variety of web pages for use of accepted guidelines and ease of use access several of their effective sites explain the effective elements of the site being viewed 	Bookmarks.

COURSE INF3010: HARDWARE/SOFTWARE ANALYSIS**Level:** Advanced**Theme:** Systems Operations**Prerequisite:** None**Course Description:** Students analyze, compare and evaluate hardware/software based on user requirements.**Course Parameters:** Access to two different computer systems, three task-specific software packages, supporting documentation.**Supporting Course:** INF2010 Workstation Operations**Curriculum and Assessment Standards**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<i>The student will:</i> <ul style="list-style-type: none">analyze and compare computer hardware and software systems	<i>Assessment of student achievement should be based on:</i> <ul style="list-style-type: none">an analysis and comparison of two different computer systems (internal components, peripheral devices). <i>Assessment Tool</i> <i>Presentation/Reports: Analysis – Hardware (INF3010–1)</i> <i>Standard</i> <i>Rating of 2 in each applicable task</i>	30
	<ul style="list-style-type: none">an analysis and comparison of three task-specific software packages on the basis of:<ul style="list-style-type: none">hardware/operating system requirementsuser friendlinesstraining/learning effectivenessinstructional supportcommand/function parametersscreen/page characteristicsintended use/audienceintercompatibility with other software.<i>Assessment Tool</i> <i>Presentation/Reports: Analysis – Software (INF3010–1)</i> <i>Standard</i> <i>Rating of 2 in each applicable task</i>	30

COURSE INF3010: HARDWARE/SOFTWARE ANALYSIS (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> prepare and present a report recommending hardware and software configurations that meet specified criteria 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> a report that responds to an identified need to provide or upgrade a computer system. The report will provide recommendations and rationale for particular hardware/software components (recommendation and reasons) that address: <ul style="list-style-type: none"> client needs information base implementation timelines financial costs workstation requirements inservice training support services warranties legal restrictions. <p><i>Assessment Tool</i> <i>Presentation/Reports: Recommending Hardware/Software (INF3010-1)</i></p> <p><i>Standard</i> <i>Rating of 2 in each applicable task</i></p>	30
<ul style="list-style-type: none"> apply, consistently, appropriate workstation routines 	<ul style="list-style-type: none"> demonstrate appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 3 – Workstation Use 3 – File Management 3 – Time Management/Organization 3 – Professionalism</p>	10
<ul style="list-style-type: none"> demonstrate basic competencies. 	<ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	Integrated throughout

COURSE INF3020: LOCAL AREA NETWORKS

Level: Advanced

Theme: Systems Operations

Prerequisite: None

Course Description: Students learn about local area network (LAN) computer systems, including hardware and peripheral configurations, interface protocols and data transmission characteristics.

Course Parameters: Access to LAN (hardware, software, support resources).

Supporting Course: INF2010 Workstation Operations

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • demonstrate basic LAN competence, as: <ul style="list-style-type: none"> – a user/operator 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • using the LAN – demonstrating ability to: <ul style="list-style-type: none"> – login, logout, use of password (if necessary) – access information and programs on a LAN – download/upload files or data on a LAN – organize information on a LAN (e.g., directories, naming of files etc.). • a report or presentation on how networks works including: <ul style="list-style-type: none"> – LAN's purpose/capabilities – network topologies – hardware/software configurations for LANs. <p><i>Assessment Tool</i></p> <p><i>Assessment Guide: Local Area Networks Project</i> <i>– Using the Network and How Networks Work</i> <i>(INF3020–1)</i></p> <p><i>Standard</i></p> <p><i>Rating of 2 in each applicable task</i></p>	<p>10</p> <p>20</p>

COURSE INF3020: LOCAL AREA NETWORKS (continued):

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> — a manager/technician 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • installation and troubleshooting of hardware/software on a network system. <ul style="list-style-type: none"> — install hardware and software — set up users, security rights, and map software — perform troubleshooting activities — design ways to protect the LAN. <p><i>Assessment Tool</i> <i>Assessment Guide: Local Area Networks Project</i> — Install and Troubleshoot (INF3020-1)</p> <p><i>Standard</i> <i>Rating of 2 in each applicable task</i></p>	20
	<ul style="list-style-type: none"> • prepare a proposal for maintaining a LAN that includes policy and procedures for: <ul style="list-style-type: none"> — network access and security — user access, rights, passwords — file/disk management — software and data upgrades. <p><i>Assessment Tool</i> <i>Assessment Guide: Local Area Networks Project</i> — Proposal for Maintaining a LAN (INF3020-1)</p> <p><i>Standard</i> <i>Rating of 2 in each applicable task</i></p>	40
	<ul style="list-style-type: none"> • apply, consistently, appropriate workstation routines <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 3 – Workstation Use 3 – File Management 3 – Time Management/Organization 3 – Professionalism</p>	10

COURSE INF3080: INFORMATION MANAGEMENT TOOLS

Level: Advanced

Theme: Productivity Software

Prerequisite: None

Course Description: Students develop competence in using information management systems software such as project management, schedules and planners for either personal or workplace applications.

Course Parameters: Computer workstation, disk, information management system software, support resources.

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate the ability to use information management software, to: <ul style="list-style-type: none"> plan projects, including setting goals, timelines and determining resource needs monitor projects, including time and resource management adjust project files, as appropriate prepare project reports describe the features of the information management software used 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> an information management project using project management software to: <ul style="list-style-type: none"> plan an identified project (business or personal) monitor the project make adjustments where appropriate prepare project reports. <p><i>Assessment Tool</i> <i>Assessment Guide: Information Management Project Planning/Monitoring (INF3080-1)</i></p> <p><i>Standard</i> <i>Rating of 3 in each applicable task</i></p>	70
	<ul style="list-style-type: none"> present the information management tool to others by demonstrating and discussing its capabilities. <p><i>Assessment Tool</i> <i>Assessment Guide: Information Management Project Presenting (INF3080-2)</i></p> <p><i>Standard</i> <i>Rating of 3 in each applicable task</i></p>	20

COURSE INF3080: INFORMATION MANAGEMENT TOOLS (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • apply, consistently, appropriate workstation routines • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • demonstrate appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 3 – Workstation Use 3 – File Management 3 – Time Management/Organization 3 – Professionalism</p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>10</p> <p>Integrated throughout</p>

Concept	Specific Outcomes	Notes
Planning	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • organize relevant data; e.g., building a house, putting on a play, building a multimedia presentation • define basic project information <ul style="list-style-type: none"> – identify all key tasks – link tasks where appropriate – assign task duration • organize tasks into an outline and detail each sub-task: <ul style="list-style-type: none"> – view different levels of task detail (expand/collapse) – set milestones – create a base calendar • create resources lists: <ul style="list-style-type: none"> – enter cost information – assign resources – apply appropriate constraints. 	

COURSE INF3150: PROGRAMMING APPLICATION 1

Level: Advanced

Theme: Programming

Prerequisite: None

Course Description: Students create programs that use external files.

Course Parameters: Computer workstation, programming language software, language code manual, support resources.

Supporting Courses: INF2150 Programming 2; INF2160 Programming 3; INF2170 Programming 4; INF2180 Programming 5

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> create an algorithm to solve problems requiring an external data file 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> distinguishing programming problems requiring the use of external data files 	30
<ul style="list-style-type: none"> develop programs that create, retrieve, append and modify text/nontext files 	<ul style="list-style-type: none"> distinguishing programming problems requiring text versus nontext files creating and revising programs that will create, retrieve, append and modify external data files creating and revising programs that will sequentially/randomly access data from external data files. <p><i>Assessment Tool</i> <i>Assessment Checklist: Advanced Programming Applications (INFPRGM3)</i> <i>Programming: Sample Assignment: PA1 (INFPSAM3)</i></p> <p><i>Standard</i> <i>Rating of 3 in the creation and presentation of programs</i></p>	60
<ul style="list-style-type: none"> apply, consistently, appropriate workstation routines 	<ul style="list-style-type: none"> demonstrate appropriate workstation routines. <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i></p> <p><i>Standard</i> <i>Rating of:</i> 3 – Workstation Use 3 – File Management 3 – Time Management/Organization 3 – Professionalism</p>	10

COURSE INF3150: PROGRAMMING APPLICATION 1 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>Integrated throughout</p>

Concept	Specific Outcomes	Notes
Algorithms/Classes	<p><i>The student should:</i></p> <ul style="list-style-type: none"> modify existing/develop new algorithms/classes identify/describe the problem list each step required to solve the problem/list the required components of the data structure demonstrate the appropriate logic/data components required to achieve the solution demonstrate the appropriate methods of creating and accessing data stored in external files compare characteristics and use of text and binary files select appropriate file structure based on problem characteristics apply structured programming constructs to modify/create a schematic/flowchart/pseudocode indicating how the solution will be achieved (IPO/HIPO). 	<p>Programmers design algorithms and use either a procedure-oriented or object-oriented language structure to code instructions for specific and unique computer tasks.</p>
Computer Language Syntax	<ul style="list-style-type: none"> use constants, variables, data structures, operands use reserved words, commands, statements, operators, subroutines, functions use language-specific derived data types 	<p>See notes from Programming 5, if available.</p>

COURSE INF3180: TELECOMMUNICATIONS 2**Level:** Advanced**Theme:** System Operations**Prerequisite:** INF2190 Telecommunications 1

Course Description: Students demonstrate knowledge of telecommunication systems by designing a new system. They use the Internet in researching and developing their design and for comparing and contrasting various telecommunication initiatives. Students analyze the effect this is having on the individual and society.

Course Parameters: Computer workstation, utility software, access to Internet, support resources.

Supporting Course: INF2200 Information Highway 2

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> use appropriate telecommunication systems, protocols and techniques to transfer messages and manage research 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> demonstrating effective and efficient use of at least two communication systems. <p><i>Assessment Tool</i> <i>Assessment Checklist: Telecommunication Systems Infrastructure Presentation/Report (INF3180-1)</i></p> <p><i>Standard</i> <i>Rating of 3 for all applicable tasks</i></p>	15
<ul style="list-style-type: none"> describe how telecommunication systems are evolving, merging and connecting 	<ul style="list-style-type: none"> report or presentation describing two examples of new telecommunication systems: <ul style="list-style-type: none"> target audience benefits and impacts (individual and societal) merging and connecting technologies <p><i>Assessment Tool</i> <i>Assessment Checklist: Telecommunication Systems Infrastructure Presentation/Report (INF3180-2)</i></p> <p><i>Standard</i> <i>Rating of 3 in all applicable tasks</i></p>	15
<ul style="list-style-type: none"> design a telecommunication solution that improves communication for an individual, business, or society 	<ul style="list-style-type: none"> a design project that includes: <ul style="list-style-type: none"> problem being addressed intended benefits projected impacts technical outline (schematic and/or prototype) cost projections. <p><i>Assessment Tool</i> <i>Assessment Checklist: Telecommunication Design Project (INF3180-3)</i></p> <p><i>Standard</i> <i>Rating of 3 in all applicable tasks</i></p>	60

COURSE INF3180: TELECOMMUNICATIONS 2 (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<ul style="list-style-type: none"> • apply, consistently, appropriate workstation routines 	<ul style="list-style-type: none"> • demonstrate appropriate workstation routines. <i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTN)</i> <i>Standard</i> <i>Rating of:</i> <i>3 – Workstation Use</i> <i>3 – File Management</i> <i>3 – Time Management/Organization</i> <i>3 – Professionalism</i> 	10
<ul style="list-style-type: none"> • demonstrate basic competencies. 	<ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tool noted above</i> 	Integrated throughout

Concept	Specific Outcomes	Notes
Transmission Forms and Systems	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • create a telecommunications solution that improves communication options for individuals, business and society • compare and contrast various types of transmission systems: <ul style="list-style-type: none"> – type of information that can be transmitted – present installation base – ability to connect with other systems – future/potential in the telecommunications industry – cost-benefit • describe how common standards allows telecommunication systems to merge and connect 	

COURSE INF3200: INTERNET SERVICES

Level: Advanced

Theme: Dynamic Environment

Prerequisite: INF2200 Information Highway 2

Course Description: Students expand their skills from INF2200 Information Highway 2, by learning how to operate, maintain and build an Internet/intranet site that may include computer bulletin boards, forums, electronic mail, Internet list servers, and/or moderated newsgroups. Proper use of hardware, software and liaison with users and clients is emphasized.

Course Parameters: Access to networked computer workstation and the Internet or intranet.

Supporting Course: INF3190 Information Highway 3

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<i>The student will:</i> <ul style="list-style-type: none">demonstrate competencies to access information from existing electronic messaging systemsdesign and create an electronic messaging systemmaintain and enhance an electronic messaging system	<i>Assessment of student achievement should be based on:</i> <ul style="list-style-type: none">demonstrating ability to access at least two of the following Internet services—newsgroups, electronic mail, Internet list servers, etc.—efficiently, following established netiquette proceduresdesigning and building at least <u>one</u> of <u>functional specialized</u> web site, electronic mail system, computer bulletin board, FTP site, news server, Internet list server by:<ul style="list-style-type: none">configuring hardwareinstalling softwaremaintaining files and user accounts<ul style="list-style-type: none">troubleshooting and diagnosing problemsoffering user support servicesmonitoring/updating information and messages. <p><i>Assessment Tool</i> <i>Assessment Guide: Internet Services (INF3200-1)</i></p> <p><i>Standard</i> <i>Rating of 3 for all applicable tasks</i></p>	<p>20</p> <p>40</p> <p>30</p>

COURSE INF3200: INTERNET SERVICES (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • apply, consistently, appropriate workstation routines • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • demonstration of appropriate workstation routines <p><i>Assessment Tool</i> <i>Assessment Checklist: Workstation Routines and Management (INFWRKSTA)</i></p> <p><i>Standard</i> <i>Rating of:</i> 2 – Workstation Use 3 – File Management 2 – Time Management/Organization 3 – Professionalism</p> <ul style="list-style-type: none"> • observation of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>10</p> <p>Integrated throughout</p>

Concept	Specific Outcomes	Notes
Access Information	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • access information from existing computer messaging systems: <ul style="list-style-type: none"> – in-house facilities – local area facilities – long distance facilities • identify and apply appropriate security procedure. 	<p>The student(s) should identify potential or real client(s) and users for their service. This could be a school, local company, community group, club or other organization.</p>
Design/Creation	<ul style="list-style-type: none"> • identify electronic messaging system specifications that address: <ul style="list-style-type: none"> – reasons/conditions to establish network – the structure and choice of Web site, e-mail, list server, bulletin board system, Forum or other messaging system – hardware/software selection – network topologies/training requirements and inter-network connections – financial considerations – ergonomic factors 	<p>Consider apprenticeship or student contract for hands-on experiences.</p> <p>A web site could be as simple as a file system on a standalone computer.</p> <p>An example of a specialized web site would be a student council survey (i.e., a data collection web site).</p>

The following linkages identify broad connections to core programs in junior and senior high.

Language Arts and English Social Studies	supporting the research and writing process: <ul style="list-style-type: none"> • Keyboarding 1–5 • Word Processing 1–3 • Graphics Tools, Electronic Publishing 1–2
Mathematics and Science	supporting problem solving and the organizing, analyzing and presenting of data: <ul style="list-style-type: none"> • Word Processing 1–3 • Electronic Publishing 1–2 • Spreadsheet 1–2 • Database 1–2 • Information Management Tools • Software Integration 1–3 • Programming 1–5 • Programming Application 1–3

With Practical Arts Courses

Courses in the Information Processing strand replace existing content in the senior high Business Education 10–20–30, Typewriting 10–20–30 and Computer Programming 10–20–30. A detailed correlation of the Information Processing strand to these practical arts courses can be found in this section (see “Information Processing-Correlations with Business Education 10–20–30 and Typewriting 10–20–30,” page H.9, “Computer Processing 10–20–30,” page H.11, and “Information Processing-Correlations with Practical Arts Courses,” page H.13).

- 18 occupations that require further education at a college or technical institution (possibly obtaining advanced standing or preferred entrance in the post-secondary program)
- 10 occupations that require further education at the university level (possibly obtaining preferred entrance into a program).

Information from the National Occupational Classification (NOC) regarding occupations in information processing-related areas that can be accessed upon completion of high school is provided in this section (see “Information Processing: Related Occupations,” page H.17).

TRANSITIONS

To the Community/Workplace

The National Occupational Classification (NOC) chart indicates occupations for which Information Processing provides a foundation. High school students could potentially move into:

- 12 occupations requiring a high school education

To Related Post-secondary Programs

An outline of post-secondary institutions in Alberta currently offering programs in information processing-related areas is provided in this section (see “Information Processing: Summary of Related Post-secondary Programs,” page H.18).

Information Processing: Connections With Other CTS Strands

Information Processing Courses	Other CTS Strands														
	Agriculture	Career Transitions	Communication Technology	Community Health	Construction Technologies	Cosmetology Studies	Design Studies	Energy and Mines	Electro Technologies	Enterprise and Innovation	Fashion Studies	Financial Management	Foods	Fabrication Studies	Forestry
Theme: System Operations															
INF1010: Computer Operations															
INF2010: Workstation Operations															
INF3010: Hardware/Software Analysis															
INF3020: Local Area Networks															
INF2190: Telecommunications 1															
INF3180: Telecommunications 2															
Theme: Text/Data Input															
INF1020: Keyboarding 1															
INF2030: Keyboarding 2															
INF2040: Keyboarding 3															
INF3030: Keyboarding 4															
INF3040: Keyboarding 5															
INF3050: Keyboarding 6															
Theme: Productivity Software															
INF1030: Word Processing 1															
INF1040: Graphics Tools															
INF1050: Database 1															
INF1060: Spreadsheet 1															
INF1070: Hypermedia Tools															
INF2050: Word Processing 2															
INF2060: Electronic Publishing 1															
INF2070: Database 2															
INF2080: Spreadsheet 2															
INF2130: Multimedia Authoring 1															
INF3060: Word Processing 3															
INF3070: Electronic Publishing 2															
INF3080: Information Management Tools															
INF3130: Multimedia Authoring 2															
Theme: Applied Processing															
INF2090: Correspondence															
INF2100: Reports															
INF2110: Tables/Forms															
INF2120: Software Integration 1															
INF3090: Software Integration 3															
INF3100: Specialization 1															
INF3110: Specialization 2															
INF3120: Software Integration 2															
Theme: Dynamic Environment															
INF1090: Information Highway 1															
INF2140: Process Control															
INF2200: Information Highway 2															
INF3140: Expert Systems															
INF3190: Information Highway 3															
INF3200: Internet Services															
Theme: Programming															
INF1080: Programming 1															
INF2150: Programming 2															
INF2160: Programming 3															
INF2170: Programming 4															
INF2180: Programming 5															
INF3150: Programming Application 1															
INF3160: Programming Application 2															
INF3170: Programming Application 3															

Provides many direct links with competencies in this strand. Students will reinforce, extend and apply a substantial number of knowledge and/or skill components in practical situations.

Provides some links with competencies developed in this strand, usually through the application of related technologies and/or processes.



Information Processing: Connections Across the Curriculum

Across the Curriculum

	Junior High							Senior High											
	Language Arts	Social Studies	Mathematics	Science	Health & PLS	Physical Education	Fine Arts	English	Social Studies	Mathematics	Science (General)	Biology	Chemistry	Physics	CALM	Physical Education	Fine Arts	Social Sciences	Second Language
Information Processing Courses																			
Theme: System Operations																			
INF1010: Computer Operations																			
INF2010: Workstation Operations																			
INF3010: Hardware/Software Analysis																			
INF3020: Local Area Networks																			
INF2190: Telecommunications 1																			
INF3180: Telecommunications 2																			
Theme: Text/Data Input																			
INF1020: Keyboarding 1																			
INF2030: Keyboarding 2																			
INF2040: Keyboarding 3																			
INF3030: Keyboarding 4																			
INF3040: Keyboarding 5																			
INF3050: Keyboarding 6																			
Theme: Productivity Software																			
INF1030: Word Processing 1																			
INF1040: Graphics Tools																			
INF1050: Database 1																			
INF1060: Spreadsheet 1																			
INF1070: Hypermedia Tools																			
INF2050: Word Processing 2																			
INF2060: Electronic Publishing 1																			
INF2070: Database 2																			
INF2080: Spreadsheet 2																			
INF2130: Multimedia Authoring 1																			
INF3060: Word Processing 3																			
INF3070: Electronic Publishing 2																			
INF3080: Information Management Tools																			
INF3130: Multimedia Authoring 2																			
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INF2140: Process Control																			
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INF3140: Expert Systems																			
INF3190: Information Highway 3																			
INF3200: Internet Services																			
Theme: Programming																			
INF1080: Programming 2																			
INF2150: Programming 2																			
INF2160: Programming 3																			
INF2170: Programming 4																			
INF2180: Programming 5																			
INF3150: Programming Application 1																			
INF3160: Programming Application 2																			
INF3170: Programming Application 3																			

Provides many direct links with course content. Students will reinforce, extend and apply a substantial number of knowledge and/or skill components in practical contexts.

Provides some links with course content, usually through the application of related technologies and/or processes.

LINKAGES — *Information Processing in Junior High*

Course Emphasis	Information Processing Courses	Management & Marketing Courses	Communication Technology Courses	Design Studies Courses
(Theme 1) Design (3 courses)	Computer Operations <i>INF1010</i>			The Design Process <i>DES1020</i>
	Graphics Tools <i>INF1040</i>			
Course Emphasis	Information Processing Courses	Management & Marketing Courses	Communication Technology Courses	Electro-Technologies Courses
(Theme 2) Programming (4 courses)	Computer Operations <i>INF1010</i>			Digital Technology 1 <i>ELT1060</i>
	Programming 1 <i>INF1080</i>			Robotics 1 <i>ELT1130</i>
(Theme 3) Written Communications (5 courses)	Computer Operations <i>INF1010</i>	Communication Strategies 1 <i>MAM1030</i>		
	Keyboarding 1 <i>INF1020</i>			
	Word Processing 1 <i>INF1030</i>			
	Information Highway 1 <i>INF1090</i>			
Course Emphasis	Information Processing Courses	Management & Marketing Courses	Communication Technologies Courses	Design Studies Courses
(Theme 4) Visual Communication (5 courses)	Graphics Tools <i>INF1040</i>		Presentation & Comm 1 <i>COM1010</i>	The Design Process <i>DES1020</i>
	Hypermedia Tools <i>INF1070</i>		Animation 1 <i>COM1070</i>	

SECTION I: LEARNING RESOURCE GUIDE

This section of the GSI explains how to obtain up-to-date information regarding learning resources that have been identified to support the delivery of courses in this strand. It provides directions for searching, by electronic means, the most current information on:

- authorized student basic, support and authorized teaching resources—resources approved by Alberta Learning for use in this strand
- provincial software agreements—licensing agreements that allow school jurisdictions to purchase educational software at significantly reduced prices
- additional sources of information—other titles and information sources that may provide potentially useful ideas for courses in this strand.

The resource listings compiled for this strand are time sensitive and subject to change. Teachers are encouraged to browse the web sites identified in this guide on a regular basis for the most up-to-date information on new learning resources, more recent versions/editions and other sources of support.

TABLE OF CONTENTS

CTS AND THE RESOURCE-BASED CLASSROOM	I.3
LEARNING RESOURCE POLICY	I.3
HOW TO OBTAIN UP-TO-DATE INFORMATION	I.4
Authorized Resources	I.4
Provincial Software Agreements	I.4
HOW TO ORDER AUTHORIZED RESOURCES	I.5
ADDITIONAL SOURCES OF INFORMATION	I.5
CTS Council	I.5
Telus 2Learn Alliance	I.5
OTHER SOURCES OF SUPPORT	I.5
ACCESS: The Education Station	I.5
National Film Board of Canada	I.6
Media and Resource Centres	I.6
Alberta Learning Monographs	I.6

NOTICE

SECTION I: LEARNING RESOURCE GUIDE

Alberta Learning authorizes a variety of resources that support learning and teaching in this strand. The 1999 amendments to Section I provide directions for obtaining, by electronic means, up-to-date information about authorized resources and other sources of information.

Teachers are encouraged to browse the web sites identified in this guide on a regular basis for the most up-to-date information on:

- authorized resources; i.e., student basic, support, and authorized teaching
- provincial software licensing agreements
- additional sources of support.

The lists of authorized resources that were previously included in Section I have been removed from the 1999 amendments to this document. From 1999 onward, up-to-date listings of authorized resources are to be accessed through:

- the Learning Resources Distributing Centre *Buyers Guide*, available electronically at <<http://ednet.edc.gov.ab.ca/lrdc>>
- the Authorized Resources Database, available electronically at <<http://ednet.edc.gov.ab.ca>> under Students and Learning, Learning and Teaching Resources.

Subsequent amendments to the *Guide to Standards and Implementation* for other CTS strands will include similar changes to Section I.

LEARNING RESOURCE GUIDE

This section of the guide provides directions for obtaining, from electronic sources, up-to-date information about learning resources that support the delivery of CTS courses in this strand. Teachers may use the information to search for current listings of:

- authorized resources that support learning and teaching
 - basic learning resources
 - support learning resources
 - authorized teaching resources
- provincial software licensing agreements
- additional sources of information
 - other titles and sources that contain potentially useful information and ideas
 - web sites that may provide access to global networks of information.

Learning resources for this strand will continue to be updated in order to maintain and expand access to current information suitable for use in a variety of CTS learning environments.

CTS AND THE RESOURCE-BASED CLASSROOM

CTS supports the development of resource-based classrooms where a variety of appropriate, up-to-date print and nonprint resources are available. This approach enables students to:

- interact with a wide range of information sources
- access and use information sources appropriately
- take an active role in managing their own learning.

CTS identifies learning resources in print, software, video and CDROM formats, as well as other sources of information available in the community and through the Internet.

Collaboration between the teacher-librarian and CTS teacher in planning resource-based research activities will ensure that students develop research skills as they increase their understanding of subject content. Planned and purposeful research activities will help students learn to

gather, process and share information, and will require access to a range of current print and nonprint resources available in the school library, other libraries, the community and/or from other sources.

Teachers are encouraged to reference *Focus on Research: A Guide to Developing Students' Research Skills*, referenced in the Alberta Learning Monographs section of this guide, when planning research activities.

LEARNING RESOURCE POLICY

Alberta Learning authorizes resources considered appropriate for provincial programs of study and that have met criteria for acceptability. The authorized resources for CTS include:

- student basic—resources that address the majority of the learner outcomes in one or more CTS courses
- student support—resources that assist in addressing some of the learner outcomes of a CTS course
- authorized teaching—resources that support the implementation of one or more CTS courses and assist teachers in the instructional process.

The Learning Technologies Branch also has developed distance education materials for a number of CTS courses. These course materials, also authorized by the province of Alberta, include a range of print and electronic products that can be used to support teaching and learning in CTS.

School boards may identify and approve instructional materials for use in their schools under section 44 (2) of the *School Act*. Many school boards have delegated the power to approve resources to school staff or other board employees under section 45 (1) of the *School Act*.

For further information on resource policy and definitions, refer to the *Student Learning Resources Policy* and *Teaching Resources Policy* or contact:

Learning Resources Unit
Curriculum Standards Branch
Alberta Learning
5th Floor, Devonian Building, East Tower
11160 Jasper Avenue
Edmonton, AB, Canada T5K 0L2
Telephone: 780-422-4872 (to be connected toll free inside Alberta dial 310-0000)
Fax: 780-422-0576
Internet: <<http://ednet.edc.gov.ab.ca>>

HOW TO OBTAIN UP-TO-DATE INFORMATION

Authorized Resources

A searchable online index of all student basic, support and authorized teaching resources for courses in this CTS strand is provided through the Authorized Resources Database on the provincial web site. Each entry in the database provides bibliographic information about the resource, an annotation where appropriate, a correlation to specific one-credit courses in this strand, and information about how to obtain the resource.

The Authorized Resources Database can be accessed at <<http://ednet.edc.gov.ab.ca>>:

- click on “Students and Learning”
- select “Learning and Teaching Resources”
- then select the “Authorized Resources Database”.

When using the database to search for resources within a particular CTS strand:

- enter the strand name as the “Curricular Area”
- select the desired “Format” and “Authorization Status” from the options provided
- click on “Submit”.

The database begins each list of student basic, support and authorized teaching resources with those resources that been authorized most recently.

Upon first entering the database, the user is provided with a title and brief description of each resource, accompanied with copyright information, authorization status, number of pages and intended use by curriculum area and grades. Then by clicking on the “More” icon, a more detailed description of each resource can be obtained, along with additional information regarding publisher/distributor, physical appearance, cost, correlation to individual CTS courses, how to obtain the resource and where the resource can be previewed.

Up-to-date information regarding the availability of distance education materials for CTS courses (i.e., print products, electronic products, products in development) can also be obtained through the web site:

- click on “Students and Learning”
- select “Learning and Teaching Resources”
- then select the “Learning Technologies Branch”.

Teachers are encouraged to browse the Authorized Resources Database and Learning Technologies Branch Homepage on a regular basis for the most up-to-date information on authorized learning resources and distance education course materials that are available.

Provincial Software Agreements

Due to frequent upgrades occurring in productivity software (e.g., software packages developed for word processing, spreadsheet, database, multimedia, drawing and design applications), this kind of software is no longer authorized by the department. However, a number of provincial licensing agreements for software products are in place that allow school jurisdictions to purchase productivity software at significantly reduced prices.

An up-to-date listing of provincial software agreements can be obtained through the “Technology” section of the web site. Teachers are encouraged to browse this listing on a regular basis for information regarding additional provincial software licensing agreements that may be established from time to time.

HOW TO ORDER AUTHORIZED RESOURCES

Most of the student basic, support and authorized teaching resources can be obtained from the Learning Resources Distributing Centre (LRDC). The LRDC *Buyer's Guide*, available in electronic or print formats, provides a complete listing of resources available for purchase and additional ordering information. The LRDC can be contacted at:

12360 – 142 Street
Edmonton, AB, Canada T5L 4X9
Telephone: 780-427-5775 (to be connected toll free inside Alberta dial 310-0000)
Fax: 780-422-9750
Internet: <<http://ednet.edc.gov.ab.ca/lrdc>>.

It is recommended that all resources be previewed prior to purchase. In some instances, teachers may find it desirable to purchase one copy for their reference and additional copies as required.

ADDITIONAL SOURCES OF INFORMATION

There are many additional sources of information—other titles, and information available from government, professional associations, industry organizations and community agencies—that may provide potentially useful ideas for courses in this strand. Of further note are a number of web sites relevant to courses in this strand, which when used effectively, can provide both teachers and learners with a global network of useable information.

The responsibility to evaluate these additional sources of information prior to selection rests with the user, in accordance with any existing local policy.

CTS Council

An online listing of additional sources of information relevant to courses in this strand is available on the CTS Council web site at <<http://ctscouncil.com>>. This site can be accessed through the CTS homepage by going to “Related Sites”.

Each entry in this listing includes the name of the resource or agency/organization, appropriate distributor/contact information, and where possible a description of the materials/services available.

The CTS Council welcomes your suggestions for maintaining and expanding the sources of information that are shared through this site.

Telus 2Learn Alliance

A searchable online listing of web sites containing information and materials relevant to courses in this strand is available through the Telus 2Learn Alliance at <<http://www.2Learn.ca>>. This site can also be accessed through the CTS homepage by going to “Related Sites”.

The Telus 2Learn Alliance welcomes your feedback and ideas on these and other sites relevant to courses in this strand.

OTHER SOURCES OF SUPPORT

ACCESS: The Education Station

ACCESS: The Education Station offers a variety of resources and services to teachers. For a nominal dubbing and tape fee, ACCESS: The Education Station will copy audiotapes and videotapes for teachers.

ACCESS: The Education Station publishes listings of audiocassettes and videocassettes as well as a comprehensive programming schedule. For further information, visit their web site at <<http://www.accessstv.ab.ca>>.

National Film Board of Canada

The National Film Board of Canada (NFB) has numerous audiovisual resources that may be suitable for use in CTS courses. While these resources can be ordered directly from the NFB, many of their materials are also available in public libraries.

For a list of NFB audiovisual resources indexed by title and subject, or to place an order for audiovisual resources, visit their web site at <http://www.nfb.ca>.

Media and Resource Centres

There are a number of urban media and regional resource centres across the province that provide on a loan basis instructional materials that may support CTS courses. Teachers are encouraged to contact their local media or resource centre for further information regarding services that are available.

Urban Media Centres

Calgary Board of Education
Calgary, AB, Canada
Web site: www.cbe.ab.ca

Calgary Separate School Board
Calgary, AB, Canada
Web site: www.crcssd1.calgary.ab.ca

Edmonton Catholic School District
Edmonton, AB, Canada
Web site: www.ecs.edmonton.ab.ca

Edmonton Public School Board
Edmonton, AB, Canada
Web site: www.epsb.edmonton.ab.ca

Elk Island Public School Division
Sherwood Park, AB, Canada
Web site: www.ei.educ.ab.ca

Medicine Hat School District
Medicine Hat, AB, Canada
Web site: www.sd76.ab.ca

Northern Lights School Division
Spirit River, AB, Canada
Web site: www.nlsd.ab.ca

Red Deer Public School District
Red Deer, AB, Canada
Web site: www.rdpsd.ab.ca

Regional Resource Centres

Zone 1
Zone One Regional Resource Centre
Peace River, AB, Canada
Web site: (not yet available)

Zone 2/3
Central Alberta Media Services
Sherwood Park, AB, Canada
Web site: www.cams.ab.ca

Zone 4
Parkland Regional Library
Lacombe, AB, Canada
Web site: www.prl.lacombe.ab.ca

Zone 5
South Central Alberta Resource Centre
Strathmore, AB, Canada
Web site: (available in September 1999)

Zone 6
Southern Alberta Learning Resource Centre
Lethbridge, AB, Canada
Web site: (available in July 1999)

Alberta Learning Monographs

The following monographs are available for purchase from the Learning Resources Distributing Centre. Refer to the "Support Documents" section or the "Legal, Service and Information Publications" section in the LRDC *Buyers Guide* for ordering information and costs.

- *The Emerging Student: Relationships Among the Cognitive, Social and Physical Domains of Development*, 1991 (LRDC Product No. 161555)

This document examines the child, or student, as a productive learner, integrating all the domains of development: cognitive, social and physical. It emphasizes the need for providing balanced curriculum and instruction.

- *Students' Interactions Developmental Framework: The Social Sphere*, 1988 (LRDC Product No. 161399)

This document examines children's perceptual, structural and motor development and how such physical development affects certain learning processes.

- *Focus on Research: A Guide to Developing Students' Research Skills*, 1990 (LRDC Product No. 161802)

This document outlines a resource-based research model that helps students manage information effectively and efficiently, and gain skills that are transferable to school and work situations. This model provides a developmental approach to teaching students how to do research.

- *Teaching Thinking: Enhancing Learning*, 1990 (LRDC Product No. 161521)

Principles and guidelines for cultivating thinking, ECS to Grade 12, have been developed in this resource. It offers a definition of thinking, describes nine basic principles on which the suggested practices are based, and discusses possible procedures for implementation in schools and classrooms.

[The 1997 text was deleted September 1999.]

Note

*Effective September 1999,
pages I.9 to I.44 have been deleted
and not replaced.*

CAREER & TECHNOLOGY STUDIES

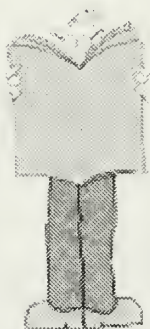
INFORMATION PROCESSING

SAMPLE STUDENT LEARNING GUIDE

INF1020 Keyboarding 1

INFORMATION PROCESSING

INF1020 Keyboarding 1



WHY

TAKE THIS COURSE?

- Keyboarding skills provide you with the licence and ability to travel the “high-tech information highway” with speed and accuracy!
- Use your keyboarding skills to make written assignments (in school, university, college or on the job) easier to do, and to earn higher marks for work that is neatly and accurately prepared and printed.
- The ability to touch keyboard quickly and accurately will enhance your daily living skills and may open doors to many different career opportunities for you.
- Increase your efficiency in using the workstation equipment and resources.
- Improve your ability in basic competencies including managing your learning and resources, communicating effectively and demonstrating responsibility.

WHAT

DO YOU NEED TO KNOW BEFORE YOU START?

It is recommended that you are able to demonstrate the exit-level competencies defined in INF1010: Computer Operations.



CAREER & TECHNOLOGY STUDIES

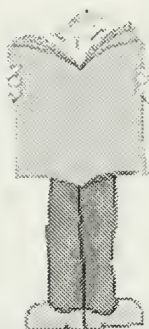
INFORMATION PROCESSING

SAMPLE STUDENT LEARNING GUIDE

INF1030 Word Processing 1

INFORMATION PROCESSING

INF1030 Word Processing 1



WHY TAKE THIS COURSE?

- Keyboarding skills provide you with the licence and ability to travel the “high-tech information highway” with speed and accuracy!
- Use your keyboarding skills to make written assignments (in school, university, college or on the job) easier to do, and to earn higher marks for work that is neatly and accurately prepared and printed.
- The ability to touch keyboard quickly and accurately will enhance your daily living skills and may open doors to many different career opportunities for you.
- Increase your efficiency in using the workstation equipment and resources.
- Improve your ability in basic competencies including managing your learning and resources, communicating effectively and demonstrating responsibility.

WHAT DO YOU NEED TO KNOW BEFORE YOU START?

It is recommended that you are able to demonstrate the exit-level competencies defined in INF1010: Computer Operations.



